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## Chapter 6: A Review Of The Bach Remedy Research Literature

The Bach Flower Remedies have—by all accounts—only just begun to be studied scientifically. Most studies conducted so far can only fairly be described as pilot studies, or proof of concept studies. These are not the large, randomized controlled trials (RCTs) with thousands and thousands of participants that might yield definitive conclusions about their effectiveness. But with that said, there have been roughly two dozen small studies performed—some better than others in terms of design—with somewhat mixed results coming out of them in support or opposition to the Bach Remedies potential effectiveness. More of these studies have shown a clear (and statistically significant) effect for the Bach Remedies than not, however, especially the most recent studies. Most of these studies involve the emotional or stress-reducing properties of the Bach Remedies, with a few of the more recent (foreign language journal articles, especially) focused on the possible physiological activity of the Bach Remedies.

Below is a critical survey of all the Bach Remedy-related articles that I have been able to gain access to, in whole or in part. I will begin this survey with some of the most widely cited—yet potentially most flawed—of the Bach Remedy studies, those involving test anxiety. I will then move briefly to a look at some of the “meta-studies” (reviews of other studies) that have been done, just to be thorough, since they are among the easiest to come across online. I will then present all of the less scientifically-sound studies that have been conducted—such as those that have not been properly placebo-controlled—for completeness sake, and to potentially gain insights into ways to test the Bach Remedies more effectively. The last third of this chapter includes a look at some of the most recent studies that have been conducted on the Bach Remedies. These also happen to be some of the most compelling, since most were properly conducted, scientifically-speaking, and seem to show a clear and occasionally powerful effect for the Bach Remedies well beyond the level of placebo.

Throughout this chapter I have included my own commentary on why, if applicable, I feel certain studies were somehow flawed, or that perhaps pointed to results different than what the article’s authors conclude. This includes not only pointing out problems with some of the negative studies, but also discussing why some of the positive results might not be all they are made out to be, either. But, at any rate, it is my take on the work that has been done regarding the Bach Remedies. Though I hope you will agree that my conclusions are logically sound, and that I present all the studies honestly and without a significant amount of bias. I do admit, however, to trying to occasionally counteract the seemingly close-minded arguments of debunkers and arch-skeptics. These are arguments that are, in my opinion, often highly flawed and selective in terms of their only reporting study results that seem to match their preconceived

notions—an approach on their part that is clearly not very scientific. This includes apparently ignoring seemingly obvious design flaws in a couple of the Bach studies that showed a negative result, and then promoting that flawed work as being irrefutable proof against the Bach Remedies potential effectiveness (i.e. Ernst, 2010). To avoid preferentially reporting results, I include every study that I have found that has been conducted on the Bach Remedies.

### **The Scientific Method/What Makes For The “Gold Standard” Of Science When It Comes To Studies**

Before getting into the Bach studies directly, though, it may be helpful to quickly review what goes into making a useful or good study/experiment in the first place. That way, we can better judge the work that has been done on the Bach Remedies, and to see if any of these studies are potentially flawed or misleading because of the approach they used in determining those results, whether positive or negative. This is because not all studies are created equal when it comes to the weight or value assigned by the scientific community to those studies. The so-called “gold standard” of science—when it comes to the scientific community accepting the validity or usefulness of a given substance for healing—is the randomized, double-blind placebo-controlled study. This is where participants are randomly assigned to different study groups, and where neither the experimenters nor the participants know at the time of testing which treatment is genuine or simply a placebo. According to Kaptchuk:

“The double-blind randomized controlled trial (RCT) is accepted by medicine as objective scientific methodology that, when ideally performed, produces knowledge untainted by bias” (2001, pg. 541).

Therefore, these types of experiments help remove some of the potentially confounding human element from various experiments. That way, a substance can be fairly judged on its own merits without the influence of preconceived notions or biases potentially distorting the results that are seen. Of course, this process does not eliminate the bias that can come from various (untested) assumptions that might be incorporated into that experimental design from the get-go. It also does not prevent any potentially false conclusions being drawn from the results of the experiment because of one’s individual bias, either. Fortunately, though, these are problems that can often be spotted after the fact by other researchers critiquing the study results.

In addition, as with all scientific experiments, one hopes to eliminate as many variables as possible that might confound the results. That way you can really focus in on determining whether a given substance or a given experimental change had an effect. So, the best studies are designed well enough to test but a single variable. Because if you have too many factors in play it can be hard to discern exactly what change or what substance was responsible for a given outcome that was observed. In studies such as will be presented below, the most scientifically valuable studies would be those that are devised in such a way that you could clearly see if the Bach Remedies were having an effect or not. This would be accomplished by limiting the only variable to whether participants were receiving Bach Remedies or an otherwise identical but

inert placebo, with no other confounding variables in play. In addition to this, the larger the study group the better, as more participants means that more statistically-relevant results can be obtained. This is similar to how surveying 1000 people about their TV preferences would give you a more accurate picture than just surveying 3 or 4 people. The best studies along these lines will also have been correctly designed so as to fairly test the Bach Remedies in the first place. This would be done by prescribing the Bach Remedies in accordance with their traditional treatment and prescription practices (which can be thought of as hard-won experience obtained in an empirical, trial-and-error, fashion over the years).

Furthermore, it is important to realize that study authors want their study question to be limited enough to determine a clear answer. So, if someone is studying the Bach Remedies effect on anxiety, they would not necessarily go on to check whether or not the Bach Remedies happened to make you healthier at the same time. Like a laser, they would be focused on that one question/outcome alone. The results of that study would then not typically be, scientifically-speaking, generalizable to other conclusions. So, if a given experiment showed that so-and-so substance was not particularly good for reducing a given condition, then it would not be scientifically correct to generalize that to conclude that the substance was not good for anything else, either. This would be just as how finding an antibiotic wasn't effective for getting rid of headaches wouldn't necessarily mean that it had no other useful functions (such as treating infections).

After completing a study or an experiment, the resulting outcome is tallied and statistically analyzed. This is where mathematical formulas are applied to determine—generally speaking, and as best as can be calculated given the number of participants involved and the outcome of the tests—whether or not the result is more likely to have occurred than by chance alone, in order to show if something “worked”. If and when the math works out so that a result is determined to be real—and not simply an illusion or statistical artifact or fluke result—the result is said to be “statistically significant”. So, if a randomized, double-blind placebo-controlled study involving a significant number of test subjects yields a statistically significant result, science would (in theory) declare that such an effect is likely real and valid. Especially if someone were to then go on to reproduce the experiment and achieve similar results.

### **The Pitfalls And Benefits Of Case Studies & Other Scientific Experimentation**

There are other forms of scientific exploration that can hint at a real effect or uncover previously unrealized information, but that are not conducted in a double-blind, placebo-controlled manner. One of these is documenting the outcomes of case studies. This is where researchers track an individual in far more depth than would be possible in a simple experiment that utilizes only a variable or two. The researchers will describe what the person says they are thinking, feeling, doing, etc, in great depth, charting change in the subject over time and attempting to draw inferences or conclusions from the ample amount of data at hand. Case studies are, by their very nature, not controlled or manipulated in the sense of a normal

experiment (where you can select for and control the variables involved, and somewhat isolate the experiment from the effects of the wider-environment). Therefore, they are somewhat more open to misinterpretation, random one-off effects, false conclusions, and other problems, including fakery and lies on the part of participants, than a controlled study. Case studies are also inherently not reproducible, as well, since they involve real people living their lives (which cannot be re-run in a subsequent experiment). This is a problem for researchers, since one of the key hallmarks of science is reproducible results. So, for that reason, scientists prioritize controlled, potentially reproducible, double-blind placebo-controlled experiments over case studies—especially since it helps to eliminate bias on the part of participants and researchers (Kaptchuk, 2001). These case studies (and other anecdotal reports of an effect from a substance) are not valued very highly by science, at least not when it comes to proving that a given substance has a real effect—especially when that substance is not expected to have such an effect in the first place. But they are still used extensively, anyway, especially in the field of psychology, in order to figure out factors that might be in play in a given case.

Besides case studies, many traditional experiments—for one reason or another—fail to include a placebo-control, or do but are not properly blinded. In these cases, the researchers know exactly what substance they are giving to individual test subjects (instead of not knowing whether the substance being given to a particular test subject is real or a placebo). Or, conversely, the test subjects themselves know exactly what they are receiving, or both situations occur. This knowledge could—theoretically—modify the outcome of the reported results by subtly influencing or predisposing individuals (or researchers) to look for or expect certain types of outcomes as a result of treatment. After all, simply knowing you were taking a sedative might cause you to expect to (and therefore allow yourself to) relax more than you otherwise would. Or thinking you were taking a stimulant might make you focus more on the sensations of energy that you are feeling than normal. By not including a placebo for comparison's sake, you won't really be able to tell what reported effects were due to the placebo effect and what was due to the substance being tested. Insufficient randomization of participants is another problem, as that can lump together similar people in the same groups (i.e. all the men in one group and all the women in another)—potentially leading to biased results, if those groups were expected to respond differently for some reason.

But, at any rate, these types of case studies and non-controlled experiments are still frequently used, and valuable insights can be gleaned from them if properly read. In that regard, even if they don't conclusively prove an effect is real, they can still hint towards a deeper understanding...and can be useful in helping researchers stumble upon an otherwise hidden effect or connection they might not have been able to piece together on their own. Therefore, they still have some value in figuring out what may or may not be going on with a given substance, because they can point the way to future experiments that could in fact be conclusive if conducted in a double-blind, placebo-controlled manner. That sort of search for hidden meaning is one of the many benefits of reporting on every Bach study that has been conducted,

pro or con. That way we aren't limited to examining only the properly designed studies that have been conducted. Instead, we can use our own intellect and judgment to decide whether the other research that has been done might provide some valuable clues to help guide and shape future research. I feel for that reason, especially, it is important to really look at the evidence directly, and even more importantly to look at the methods used to perform the study in order to obtain that evidence. That way we can truly see if a given study was inherently flawed, biased, or predisposed to show a positive or negative result in the first place because of the methods employed. By carefully examining the evidence in this manner, it might also be possible to devise ever more accurate and powerful ways to test the Bach Remedies, too. After all, a lack of evidence is not the same as an evidence of lack, to paraphrase an old scientific saying. I say this because scientists (as a profession) haven't yet really taken the time to investigate the Bach Remedies properly (with only a couple dozen studies in total over the years, of varying quality). But that certainly does not mean that the Bach Remedies should not be investigated. It also doesn't mean that a potentially new understanding of disease and/or new discoveries concerning health can't be made by investigating the Bach Remedies more fully and fairly, either.

### **Test Anxiety Studies/Critiques Of Them**

I will begin this literature review with the most well-known and widely reported studies (by skeptics, at least) that have been performed on the Bach Remedies, the test-anxiety ones. Selective reporting of facts is not scientific, so—unlike skeptics and debunkers that seem to only focus on and report the studies that showed no effect (i.e. Ernst, 2010)—I will present every study I have come across on the Bach Remedies, pro or con, as I mentioned at the start of this chapter. I also feel it is really important to examine all of the experiments that have been done on the Bach Remedies with an encompassing yet suitably critical eye. This means not being afraid to point out when experiments are poorly designed or are not in keeping with the basic principles of the Bach system's prescribing and dosing schedules. By doing this, it becomes possible to really understand what the studies have shown (or not shown), and what this means for the Bach Remedies as a healing system, and the broader implications of it all. So, some key things to keep in mind when interpreting all the Bach studies that have been conducted include, in my opinion, whether or not the study:

- Was placebo-controlled, double-blinded, and sufficiently randomized;
- Showed a clear effect beyond the level of placebo;
- Was conducted by experimenters free from perceived bias;
- Whether or not those participants that started out in the experiment actually made it through to the end of the study;
- Was in keeping with traditional Bach prescription practices. This includes whether the experiment was relevant to the Bach Remedy system; whether treatment was individualized based on the person's mood; and whether treatment was limited to only the needed Bach Remedies at the time (or if they included many more than that);

- And simply the manner the results were reported—via survey, self-reporting, a doctor’s examination, etc, all of which could influence the reported outcome of a given study.

With all that in mind, the first test-anxiety study was performed by Armstrong and Ernst and published in 2001. This is the same skeptical Ernst quoted previously back in chapter 3, as regards the Bach Remedies potential effectiveness, or lack thereof. This study involved 100 college students preparing to take an exam, with roughly half being given a placebo and the other half being given the composite remedy known as Rescue Remedy. Rescue Remedy is made up of five individual Bach Remedies (Star of Bethlehem, Impatiens, Cherry Plum, Rock Rose, and Clematis). Actually, this study used Five Flower Remedy, which is the same thing as Rescue Remedy, but is made by a different manufacturer than Nelsons, which makes Rescue Remedy. Unusually, by Bach prescription standards (at least when it comes to Rescue Remedy), the students were given their bottles a week ahead of time and told to dose regularly up until the exam (Armstrong & Ernst, 2001). Rescue Remedy is usually only given for emergencies, with other Bach Remedies, such as Mimulus (for known fears, such as of taking a test), Larch (for confidence), or Elm (for feeling overwhelmed with a task or an assignment), being given for the typical feelings that come about when taking a test, and which are not part of Rescue Remedy. So it is a bit hard to gauge whether this study was even designed properly in the first place to adequately test the Bach Remedies. After all, the only components of Rescue Remedy that would likely help with exam stress are Rock Rose (which is for life-and-death panic), Cherry Plum (which is for feeling like you are going to go out of your mind), and perhaps Star of Bethlehem (which is for sorrow and grief). Needless to say, there must be only a very small percentage of students that feel that strongly when taking a routine school test—even if many people do get a bit stressed-out or worried when taking them.

Perhaps because of this, the results of this study showed no clear statistically significant difference between the placebo group versus the Rescue Remedy group, and both groups seemed to get less stressed as time went on (Armstrong & Ernst, 2001). At day three of the trial, though, the students in the Bach Remedy group did experience considerably reduced anxiety than their peers (and at a statistically significant rate). But by day seven this had evened out between the two groups—presumably as the stress became more pressing and unavoidable as the exam drew closer. Complicating things further, this study was plagued by a high drop-out rate, with only 45% of students completing the study—and that only after much dogged follow-up on the part of the study’s authors. This high dropout rate even led the authors to admit that it might undermine the results to some extent (Armstrong & Ernst, 2001). Because of this high dropout rate, a later “systematic review” article (a meta-study of previously done studies on a given topic) concluded that this study’s outcome was at a high risk of bias, and therefore not all that scientifically valuable (Thaler et al, 2009).

Interestingly, to me at least, if you look more closely at the breakdown of the individual groups, the placebo-taking group had significantly more people that stated they “always experience exam nerves” than did the Rescue Remedy group (12 to 5) (Armstrong & Ernst,

2001, pg. 219). Theoretically, this is the very group of students that would be most likely to need Rescue Remedy in the first place. The researchers also didn't think to specifically examine whether this minority of highly stressed students showed an effect from the Rescue Remedy, instead lumping the results of all the participants together for analysis (Armstrong & Ernst, 2001). This would have greatly skewed the results, since the participants in this subgroup would theoretically be the only ones that would be expected to show much of a response from the Rescue Remedy in the first place. This would lead to any potential improvement seen from this portion of the Rescue Remedy group to be statistically diluted by the larger group of (expected) non-responders. In my opinion, this is one of those examples of poor study design hiding behind a double-blind, placebo-controlled label. This is because the results seem destined to not show any effect because of how participants were evaluated (lumping together the results of many expected non-responders with those few participants that might actually be expected to show a response from the Rescue Remedy).

But, at any rate, as the authors themselves state, "its negative result should not be over-interpreted" (Armstrong & Ernst, 2001, pg. 221). They also state that this study in no way proved the Bach system did not work in general; at most it showed no effect in this one small study. And it was, of course, a study that was plagued with a high dropout rate, as mentioned, and had a questionable design to begin with. This is especially true since it studied "test anxiety"—something Rescue Remedy itself is not really designed to address in the first place. So any negative results from it should be taken with a large grain of salt. Just to nitpick a little more, the authors of the study also got some of their facts wrong, saying Rescue Remedy was designed by Dr. Bach to treat anxiety (it was actually designed to help in life-and-death emergency situations) and also that it "is believed to work independently of the patient's state of mind or personality" (Armstrong & Ernst, 2001, pg. 220). Again, the Bach Remedies are an individualized treatment specifically based on the patient's personality and state of mind, and need to be properly matched-up to work. Though in defense of the authors' statement, the Bach Remedies are not said to be dependent on individual belief (i.e. faith-induced placebo effects) in order to produce their effect. The authors also somewhat dismissively state that the Bach Remedies are made by "dropping fresh flowers into water" (pg. 215) and that they are too dilute to have any physiological effect (Armstrong & Ernst, 2001)—without offering up any proof of such a high dilution.

There was another test-anxiety study that was performed by Walach et al in 2001. But it was only double-blind and placebo-controlled for the first half of the experiment, at which time everyone switched to Bach Remedies, with no placebo control with which to compare the reported stress-reduction. It was therefore also only single-blind for the second half of the experiment, since the researchers knew exactly what the participants were taking—thus theoretically introducing potential bias into the results (Kaptchuk, 2001). Experimentally, it also just doesn't seem all that helpful to me to only be comparing two groups taking the same thing against each other for one half of the experiment (Walach et al, 2001). This is especially true

since the experiment covered two different exams, with the more stressful exam reportedly coming second, and no placebo control to see how well the Bach Remedies helped people deal with that more stressful portion of the exam period (Walach et al, 2001).

In addition, in this experiment, participants were given 10 Bach Remedies regardless of what they actually needed at the time (Walach et al, 2001). This was in an apparent attempt to cover all the bases—and many of these Bach Remedies do seem relevant to test anxiety. Unfortunately, as any Bach practitioner knows, the more unneeded Bach Remedies that are added to a mix the less pronounced the results tend to be from the needed Bach Remedies. It is as if the action of the Bach Remedies gets interfered with or confused or overshadowed by the sheer number of Bach Remedies given. Individualized Bach Remedy treatment (perhaps selected for by means of a written survey or questionnaire) would, of course, have been a better way to go than a blanket application of potentially useful Bach Remedies. The authors themselves even admit this fact, though still decided to go with 10 non-individualized Bach Remedies for some reason instead. Participants were also instructed to take 4 drops of the Bach Remedies once daily—as opposed to 4-drops 4-times a day, as per traditional Bach practice. Participants were told, however, that they could take it more often if desired (though the outcome of those people that took it more often was not specifically tracked). But regardless, the results failed to show an improvement over placebo in the Bach Remedy group, and the placebo group actually seemed to become less stressed than the Bach group over those first two weeks! Though it should be noted that the placebo group started off with higher baseline measures of anxiety than members of the Bach group, and even though they dropped more in terms of overall percentage they never reached the Bach group's (lower) level of anxiety (Walach et al, 2001).

At any rate, before we make too much of that negative finding, the aforementioned systematic review concluded that this negative result was also at a high risk for bias due to insufficient randomization of participants, and therefore not very scientifically valuable (Thaler et al, 2009). But by far the most important fact to realize about this experiment is that it suffered from a seemingly overlooked yet huge and potentially study-invalidating flaw: participants were given possession of both treatment bottles at the start of the experiment, with no oversight as to which one they actually used during the two different trial periods (Walach et al, 2001; Walach, personal communication, 2016). It doesn't take much of a stretch of the imagination to think that a stressed college student worried about exams and given two different bottles would be highly tempted to let science be damned and take both bottles at once to try to get some relief, and improve their exam grades accordingly. Especially considering that one bottle could reasonably be assumed to be a placebo, while the other bottle could reasonably be assumed to include a substance designed to help them deal with that anxiety. At the very least, it is highly likely that at least some of the students might be tempted to try both bottles right away out of simple curiosity, just to see if they noticed anything from taking them. Even if only a few of the students were to give in to this temptation, the results of the experiment would potentially become skewed and therefore effectively invalid, scientifically-speaking. The simple precaution



of not giving out the second bottle until students handed in the first one would have avoided this huge design flaw. But since that didn't happen, any firm conclusions drawn from that study (i.e. the Bach Remedies don't work as advertised) are obviously highly suspect, since they are based on potentially tainted data to begin with. It is impossible to know from this experiment with any degree of scientific certainty if the negative result seen came about solely from a failure of the Bach Remedies (though they were not prescribed or dosed properly, as mentioned above) or from problems with the experiment's design. This is because the study outcome (a decrease in stress among all groups) could simply have been the result of people taking both bottles at the same time; people becoming confused about which bottle they were supposed to be taking; or from people going back and forth between the two bottles every so often in an attempt to reduce stress and do better on their exams. This study is, unfortunately, yet another (very) poorly designed experiment hiding behind a double-blind (and/or single-blind) placebo-controlled title. Though skeptics certainly seem happy enough to report its negative results as unquestionable-proof against the Bach Remedies potential effectiveness (i.e. Ernst, 2010).

A third study along these same test-anxiety lines—this time once again using Rescue Remedy—that was randomized, double-blinded, and placebo-controlled, was performed in 2007 by Halberstein et al. This time the authors dosed the Rescue Remedy somewhat according to Bach-principles (at the time of the acute stress, not starting a week ahead of time). More crucially, though, the data was analyzed for both general results and for the subgroup of those individuals that labeled themselves as being “highly anxious”. This is the very (only) group that would be expected to benefit from the Rock Rose (and to a much lesser extent, Cherry Plum and Star of Bethlehem) that is a part of Rescue Remedy in the first place. In this “highly anxious” subset of the exam population, there was found to be a statistically significant reduction in high levels of situational anxiety for the Bach Remedy group versus the placebo group. Overall, the results were relatively equal between the placebo and Rescue Remedy groups, without a statistically significant result being obtained (as would be expected, if most people weren't particularly panicked over the test in the first place). But this study appears to scientifically prove that Rescue Remedy can indeed have an effect on our mood, as it helped that highly anxious subgroup of students that Rescue Remedy would be most expected to help in the first place (Halberstein et al, 2007).

In the systematic review that I have mentioned previously, this study was said to be the best designed of all the test-anxiety studies, and was said to have a low chance of bias by the same reviewers (Thaler et al, 2009). Though the systematic review's authors also failed to officially include this positive finding in their review. They left it out because they said it could have possibly been a result of post-study analysis finding a random link that wasn't really there, or that it might be subject to “regression to the mean”, a statistical effect that implies that a future study wouldn't show the same result (Thaler et al, 2009). But since, theoretically, Rescue Remedy would only help the most panicked of test-takers in the first place, it is hard to see how this criticism is valid in my opinion. Such a result would be easily predictable ahead of time, if

someone really thought about the experiment and Bach Remedies employed, and made testable predictions from that. It seems like its exclusion is more of a way to confirm a preconceived (if perhaps subconscious) bias against the Bach Remedies on the part of the researchers than a valid dismissal of the evidence, in my opinion.

A fourth study of test-anxiety, this time not really double-blinded, was contrived to test Rescue Remedy and its effects on anxiety and stress (Forshaw & Jones, 2010). This time, participants were divided into three groups and were directly told whether they were taking Rescue Remedy or plain water. Except that one half of the group that was supposedly receiving Rescue Remedy actually just received plain water, so as to compare placebo responses (Forshaw & Jones, 2010). This situation raises obvious questions about the potential influence of attitudes on the outcome. After all, anyone skeptical of Rescue Remedy (and thought they were taking it) would be less likely to ascribe any effects they felt as coming from it in the first place. They would probably instead attribute that feeling to something else, or dismiss the sensation entirely, skewing their reporting of subjective relief. The exact reverse of this would also be true for those that strongly believed in the Bach Remedies, of course.

More importantly, this test was also highly flawed, in my opinion, because it was not a real test that the students would be graded on (Forshaw & Jones, 2010). It was simply a few brain-puzzlers that were given in a group setting. There was a measurement of anxiety taken at the start, followed by a round of timed puzzles given, then the experimental phase where everyone consumed their drink of either water or Rescue Remedy or fake Rescue Remedy. This set-up sounds to me more like a novel experience with your classmates than an actual test with real consequences for your academic career. Anyhow, after this first round of puzzles/consuming their substance, the participants were then given another puzzle test, and then completed another written evaluation of their state of anxiety. All groups showed decreased anxiety, none statistically significant over another (Forshaw & Jones, 2010).

Besides not being double-blinded, this result is highly questionable because all the students were told after drinking their substances to relax and chat with their fellow students for a few minutes before the next test (Forshaw & Jones, 2010). This would have confused the question as to what would have led to any reported stress reduction among the various groups (by introducing confounding variables into the equation—i.e. jokes students might have been telling to each other). Plus, this experiment contained almost no actual stress, since it was not a real test, not graded, and participants were not singled out in any way by the researchers—as would happen with, say, an individual timed mathematical test performed while being observed closely by a group of intimidating looking researchers holding clipboards (Forshaw & Jones, 2010). In addition, virtually any human social activity will likely be subject to a decrease in stress over time (after an initial increase), regardless of what stress-reducing methods were employed. This can be seen in how people might feel self-conscious or awkward when first getting together in a group, but then settle down and feel more relaxed once the initial awkwardness was over. This particular test anxiety study had built into it this basic initial stress-

inducing/stress-reducing factor. This means that both placebo and non-placebo groups would automatically tend to become less stressed over time, regardless of what they were actually taking, since it was more akin to a social outing/novel experience than a real stressful event. This would, of course, confuse the results to some degree, regardless of what substances were being tested. So, with that in mind, future Bach studies should probably be designed to study situations where there isn't expected to be a strong natural decrease in feeling/anxiety within a short period of time—to better be able to tell if the Bach Remedies are in fact working.

Just to nitpick further, as any skeptic would happily do to a Bach study that showed a positive result, the fact that the participants took the treatments together in the same testing space—and were told to talk to and interact with each other immediately afterwards—leads this experiment to zero validity, in my opinion. As mentioned previously, this would have added new stress-reducing variables entered into the equation (such as the jokes students might have heard, along with the verbal instructions given to relax) that could skew the results. But this set up would also have subjected the students more strongly to the effects of the subconscious mirroring of behavior and emotional states that can occur via the mirror neuron system in the brain (Winerman, 2005). This is because researchers have discovered that there are actually neurons in the brain that make you feel the way your brain perceives others around you to be feeling and acting, without your conscious mind recognizing that this effect is occurring. Hence their name, mirror-neurons, as you end up subconsciously reflecting and experiencing (mirroring) that observed mood and behavior for yourself. So, even if the Rescue Remedy had worked in this particular case, and those participants taking it started to relax because of it, the other people in the room could conceivably—due to this mirror-neuron effect—begin to feel more relaxed themselves as a result of that, skewing the results. These sorts of tests should probably be conducted with the students in isolation from one another to rule out this very real confounding effect. Anyhow, that complaint might just be nitpicking—but it is scientifically accurate nitpicking. If you happen to doubt this effect could be at play in this case, here's a relevant quote from neuroscientist Vittorio Gallese, regarding mirror neurons: “This neural mechanism is involuntary and automatic...with it we don't have to think about what other people are doing or feeling, we simply know” (Winerman, 2005, pg. 48). So, if people around you begin to relax (from whatever the cause), the innate tendency is for you to then feel more relaxed yourself as a result (Winerman, 2005)—regardless of which treatment you were actually taking!

Anyhow, at this time I feel I should take a moment to state for the record that it seems to me that all the test-anxiety studies may be inherently flawed as a suitable test of the Bach Remedies. This is simply because test anxiety is based on so many core issues (variables) to a person. These include things such as the need to do well to please parents and teachers; the desire/need to get good grades to woo potential employers; and potentially could involve many other relevant issues such as confidence, their previous life experiences of having good or bad outcomes from schooling, and so forth. Because of that, any short-term treatment period with Bach Remedies is unlikely to allow one to fully overcome all these deep-seated, long-lasting, and

pernicious tendencies in just one brief go (even if they could still help to some noticeable degree). With such a diverse set of reasons why a person might become nervous from testing, and so many possible specific Bach Remedies involved to help deal with it, I have to wonder if it is even a good model to test the Bach Remedies in the first place. There are just way too many variables in play in terms of the reasons for experiencing that test anxiety in the first place to really be comparing apples to apples, if you will, as a well designed study is supposed to do. Especially when treatment is not even being individualized to each student, in terms of their respective reasons for feeling anxious about their exam in the first place. After all, the Bach Remedies are a healing system first and foremost, and a stress-reducing personality-developing system secondarily, as a means to accomplishing that healing end. Surely there must be a better way to test the Bach Remedies?

### **A Review Of The Systematic Reviews Of The Bach Remedies**

Anyhow, moving on, most of the “studies” of the Bach Remedies that are easy to come across online are actually just systematic reviews of the available literature. They are all rather old at this point in time, and typically exclude anything that isn’t from an English-language journal, and that isn’t a 100% double-blind and placebo-controlled RCT. So they typically bring up the same studies mentioned above, along with an ADHD study I will address later on in this chapter. Two of these systematic reviews were conducted by Ernst (the co-author of the first journal article mentioned above on test-anxiety). In them, he gives his study full marks for both design and validity, despite only 45% of the participants having finished the experiment, and where Rescue Remedy wasn’t really the most applicable set of Bach Remedies for that particular problem to begin with (Armstrong & Ernst, 2001; Ernst, 2010). This makes me personally question the overall results of his review, especially when I go on to read that Ernst only gave the Halberstein et al study (which showed a positive result for the anxious-subset of students taking Rescue Remedy) 2 out of 5 marks for study design (Ernst, 2010). This meant it was tied for lowest in the entire review with a non-placebo controlled, non-blinded study—despite the Thaler et al review giving it top marks as being the best designed study (and the least at risk of bias) of the bunch (Ernst, 2010; Thaler et al, 2009).

For those that are curious, and to show the potential biased perspective Ernst brings to his review (and study?), a quick look at his website reveals the report of an experiment that does show physiological effects from the Bach Remedies (that occurred after his review, and which will be discussed later on in this chapter on page 145). Ernst has helpfully applied various derogatory labels/tags to that journal article on his website, including terms such as “pseudoscience”, “bogus claims”, “irrationality”, “misleading consumers”, and “unreason” (Ernst, 2014). This is funny, especially considering that this study was apparently a properly conducted, double-blind placebo-controlled study (Resende et al, 2014)! Perhaps he simply didn’t like the results? Ernst also includes certain false/untested premises in his report of that particular study. This includes the claim that the Bach Remedies are so dilute so as to contain no

active molecules of any substance, as with homeopathy, and therefore could have no real effect whatsoever (a false assumption I discussed in depth in chapter 3) (2014).

Ernst doesn't help instill much confidence in the objectivity of his systematic review, either, when he goes on to make the sweeping conclusion that the Bach Remedies perhaps even deserve no further scientific scrutiny largely because of the negative test-anxiety findings (2010). Especially when those findings are based on what seem to be highly flawed studies in terms of their original design, as I have attempted to point out above. Not to mention the fact that they are very narrow in scope (test anxiety in college students). Plus, they don't even measure the effects the Bach Remedies have on the body in terms of healing or health function. Anyhow, Ernst' approach is a clear example of how easy it is for a skeptic or debunker to distort or misrepresent data, or at the least selectively interpret it, in an apparent attempt to discredit an entire system based on the flimsiest of evidence. That's why I prefer sharing every study—pro or con, however long that may make this chapter—so that people can better decide for themselves.

The other easy to come across systematic review online was conducted by Thaler et al (2009). It was an insurance company review designed to study the safety of the Bach Remedies for insurance purposes. In terms of study design, its authors decided to exclude any foreign-language journal article from its Bach Remedy review from the get-go, missing many important studies that seemed to show a positive effect for them. It was also performed in 2009, before many of the recent studies that have showed a physiological effect for the Bach Remedies. Though it probably would have excluded many (but not all) of them from the review anyway, since many were not originally published in English. At any rate, these particular systematic reviews are currently obsolete and exclude many relevant and well-conducted studies based on the arbitrary review criteria they instituted (such as their having been written in Spanish), so their inevitable conclusions (that the Bach Remedies have shown no real effect beyond placebo) should also be taken with a large grain of salt.

Nelsons, the company that manufactures one of the main brands of the Bach Remedies, conducted a literature review in 2006 of the scientific research that had been conducted up until that point, including both placebo-controlled studies and various case studies (“Bach...”, 2006). It is interesting in that it gives a more narrative and in-depth accounting of the different studies than the more abstract or clinical systematic reviews mentioned above. Of course, since it was conducted by the prime manufacturer of the Bach Remedies, it certainly might be considered somewhat more biased than the others—though probably not much more so than the Ernst review, when you really think about it. But, again, it is now out of date and does not include the most recent and interesting studies that will be dealt with towards the end of this chapter, regardless.

## **Other Bach Studies/Many Not Placebo Controlled Or Double-Blinded**

Apart from the test-anxiety studies, there has been other research into the Bach Remedies that hint at their possible effect. Though unfortunately only a few are up to the “gold standard” of scientific research mentioned earlier, and these are the well-designed studies I will primarily address towards the end of this chapter (starting on page 140, in case you decide you want to skip ahead). Many, but not all, of the other Bach studies that we will look at in this section are flawed in some way. This includes things such as their not being double-blinded, not being randomized, not being placebo-controlled, not being peer-reviewed, or they suffered from a high dropout rate. They also often have some other methodological problem, such as having too many variables, that makes it hard to draw definitive scientific conclusions from them. But—to an inquiring mind, at least—they often still hint at a possible effect for the Bach Remedies, and if anything call for further research on the matter. So, I will examine these before moving on to some of the more convincing recent studies, just to be 100% complete and thorough in this literature review.

The oldest of these studies (1979) was conducted as part of a Ph.D. dissertation to test whether the Bach Remedies could help increase personal growth (Leviton, 2006). This was a randomized, double-blind placebo-controlled study involving three different groups: one given placebo, one given a mix of four Bach Remedies, and one given a mix of seven Bach Remedies. Participants were tested before and after the trial on a standardized scale. After the three month trial period, the placebo group and the group taking a mix of seven Bach Remedies showed no statistical change. Interestingly, though, the members of the group taking four Bach Remedies reported a statistically significant greater sense of creativity, sexuality (!), and overall wellbeing than the other two groups. The author of the study, Weisglas, took that to mean that taking too many Bach Remedies at once can interfere with the effect, as per traditional Bach recommendations (Leviton, 2006). This trial wasn’t officially included in any of the systematic reviews I have come across, as there was some talk of methodological problems with the study, such as its potentially employing too many variables (Ernst, 2010; Thaler et al, 2009).

There was also a study from an anesthesiologist in Japan (Dr. Shigeyoshi Toyota) that investigated whether Rescue Remedy might be useful as a pre-anesthetic calming agent in patients about to undergo major surgery (Toyota, 2005). In this case, Dr. Toyota divided patients into two groups, one receiving Rescue Remedy and one receiving a placebo. This experiment was placebo-controlled, randomized, and double-blinded. 40 patients took part, and those patients were told to take 4-drops from the treatment bottle as often as they liked before the day of surgery. One person ended up cancelling their surgery, and three other people didn’t feel like taking the treatment, so were excluded. Physiologically speaking, as regarded blood pressure, heart rate, etc, Dr. Toyota found no statistically significant differences between the two groups on the day of surgery. Though he did find that heart rate had decreased amongst patients on Rescue Remedy, though not to a statistically significant degree, meaning it could have just been a random coincidence. But Dr. Toyota also thought to employ an indirect measurement of

perceived stress reduction (the volume of liquid remaining in the treatment bottle at the end of the study period). When he did this, he found that patients in the Rescue Remedy group had used their treatment bottles much less frequently as compared to those on the placebo. This implied (to Dr. Toyota, at least) that Rescue Remedy was helping to reduce these patients' levels of stress. Therefore, the patients in this group didn't feel the need to take it as often as the placebo group. The further implications of this are, of course, that the placebo group took their treatment more often in an (unsuccessful) attempt to reduce their levels of stress—which weren't really being reduced because they were just taking a placebo, unlike the Rescue Remedy group (Toyota, 2005).

The fact that the patients' heart rates still went up at the time of surgery, even with prior Rescue Remedy treatment (Toyota, 2005), also makes sense—considering that any major, immediately relevant, stressor will likely initiate the body's stress response system. This would cause the heart rate to go up regardless of how relaxed you managed to stay (relatively speaking) beforehand. This would be especially true considering Bach Remedy Mimulus, which is for known fears (such as of having surgery), is not part of Rescue Remedy. Therefore it could not contribute to the prophylactic effect of pre-treatment for reducing that stress, by helping people to become less worried about having their surgery in the first place.

As previously mentioned, the gold-standard in science when it comes to studies is widely said to be the randomized, placebo-controlled, double-blind study, but this is not the only scientific way to explore the effectiveness of a substance. Individualized case studies can document an effect, as well. While certainly not as convincing as a double-blind RCT to a skeptical mind, they can still point to the fact that something is working or has validity, or may potentially be deserving of further study. At any rate, one such review of case studies shows that the Bach Remedies might be useful in pain reduction (Howard, 2007). This review could potentially be considered biased, however, as it was written by one of the chief members of the Bach Centre at the time. It also relied on submissions of reports by students eager to get their official Bach-practitioner registration designation from the Bach Centre. This setup, of course, potentially makes these case studies more open to selective reporting and/or charitable interpretations of the results by the submitting practitioners than some other studies—such as where the practitioners' pending accreditation does not seemingly hang in the balance of having achieved a positive result (even though it certainly doesn't). At any rate, with that said, of the 384 case studies that were reviewed, 41 patients reported to their Bach practitioner that they experienced pain at the outset of the consultation period. After treatment, which typically would be over a couple of months in these sorts of “field studies”, 46% of these patients reported that they thought treatment had helped reduce their pain. In total, 88% of all the individuals in these case studies reported that their mood and emotional outlook had improved since beginning treatment. Howard concluded that, even though there was no blinding or placebo control against which these patients were tested, the results were encouraging enough by themselves to call for further studies (2007).

There was also a very small study conducted in conjunction with the Bach Centre and the 12 Healers Trust (which is a foundation devoted to furthering the work of Dr. Bach and the Bach Remedies) (Balgobin, 2015). This connection, of course, potentially opens up this study to some degree of perceived bias on the part of the experimenters. At any rate, this experiment was designed to study the effects of the Bach Remedies on reducing stress amongst emergency workers. Unfortunately, scientifically-speaking, this study was not very valuable because there was no placebo group with which to compare to the Bach Remedies. Instead, the experimenter decided to simply use Rescue Remedy in comparison to individualized Bach treatment, but without a third placebo group with which to compare the responses that were seen. Thus they only tested the difference between individualized versus non-individualized Bach treatment. The author said they did this because of the ethical concerns of not giving one group something that might help them—which is understandable, I guess, though certainly not very helpful in terms of proving the Bach system. The author also reported a very difficult time recruiting participants (due to the fact they were trying to test a flower-based remedy, apparently). And so they only ended up with 12 participants, of which they only have data for 11. These were often the spouses of the emergency workers instead of the emergency workers themselves, due to the difficulty in recruiting them directly as participants (Balgobin, 2015).

Using a standard measurement of distress via the “CORE-OM” evaluation questionnaire, it was found that most of these participants were *not* particularly all that stressed to begin with (Balgobin, 2015). Though after the trial period they had become less stressed, and the individualized-Bach group appeared to have become less stressed than the Rescue Remedy group did. However, it was not exactly clear to me from the write-up how the Bach Remedies were individualized. It appeared to me as though the group receiving individualized treatment might have received a typical Bach-consultation that the Rescue Remedy group did not receive. Though both groups did reportedly meet for various consultations at different points (or check-in periods, at least). If there was a difference in that regard (time spent with the Bach practitioner) then that could conceivably affect the results, through whatever benefit talking/therapy might provide in and of itself. At any rate, the author states that the small sample size precluded any real statistical analysis that could adequately compare the two groups. So that means we can’t read too much into it, pro or con, anyway, especially considering there was no placebo group. So I only include it here for completeness sake (Balgobin, 2015).

There was an interesting study conducted by Rühle involving 24 pregnant women that were overdue by 5 or more days for their delivery date (1995). Women in this study were divided into three groups of 8 women each. The first group was given (somewhat) individualized Bach Remedy treatment. This included primarily Rescue Remedy, but also Bach Remedies such as Mimulus (for known fears, such as of giving birth) or Honeysuckle (for not wanting the pregnancy to end). The second group of women simply got psychological counseling. The third group received no additional treatment other than the typical, required, medical interventions—as did all three groups. Unfortunately, this study was not blinded or



placebo-controlled, as there was no group receiving, say, fake drops or fake counseling. But it did show some rather interesting results. While the Bach Remedy group did not give birth more quickly than the other groups, the women giving birth in the Bach group reported using statistically significant fewer medications than the other groups. In fact, of the eight women in the Bach group, only one needed to have any orthodox pain medications at all. Overall, the women in the Bach group were said to have given birth with less anxiety and even less difficulty than the other two groups. None of the women in the Bach group required a C-section, unlike three of the women across the other two test groups. Without a placebo-controlled group it is hard to read too much into the study, especially considering its small number of participants (Rühle, 1995). But it certainly seems like a study worth repeating in a double-blind placebo-controlled manner to see if a similar benefit could be obtained from use of the Bach Remedies.

A non-blinded non-placebo controlled study was conducted in 1997 by Campinini (“Bach...”, 2006). It examined 115 patients, of which 91 made it through to the study’s end. In this case, unusually, they were given individualized treatment with the full range of Bach Remedies in keeping with traditional Bach practice. These participants were said to be suffering from either anxiety or depression. Interestingly, a full 89% of the participants in this study were judged by therapists as having made a *partial to complete* recovery after Bach treatment. It was also said that most of those recovered within the first 18 weeks of treatment. The Nelsons’ review points out that many psychiatric complaints disappear on their own over time. So, without a control group, it is once again hard to tease-out exactly what effect the Bach Remedies had, if any. But the Nelsons’ review also points out that this study examined the effects of belief on whether or not it improved treatment outcomes. Interestingly, they state that 10 out of the 11 people that were characterized by the study’s author as non-responders to treatment were actually firm believers in the Bach system, as opposed to being skeptics. Of course, this fact would be somewhat surprising if the Bach Remedies were simply a placebo. I was not personally able to access the original journal article, so I cannot add any further details. But this is another interesting study result that hints at the Bach system’s potential effectiveness, even if it is certainly not sufficient on its own to directly prove anything, scientifically speaking (since it wasn’t double-blinded or placebo-controlled). But 89% of patients making a partial to complete recovery is certainly a large number (“Bach...”, 2006). It is also presumably a much larger number than a simple placebo would cause, or else researchers probably wouldn’t bother looking for more anxiety or depression treatments in the first place. With a success rate that high, it seems they would have already found it!

There is another study that is barely worth mentioning here by Hyland et al, that was conducted in 2005. I say this because the authors—unscientific as it sounds—simply assumed the Bach Remedies to be a placebo, and used Rescue Remedy as the placebo control against another treatment, in order to test the effects of expectancy (“Bach...”, 2006). Though the Nelsons’ report indicates that the authors seem to have gotten a response they were not expecting, perhaps because the Bach Remedies are not actually just a placebo. There have also

been some widely-reported studies by Cram seeming to show a statistically significant effect of the Bach Remedies on reducing the activation of the stress response, as measured by electromyography. Though apparently those results might be somewhat dependent on where the electrodes are placed in order to detect the effect, according to the Nelsons' review. Another study by the same author showed good results—though, again, in a non-blinded fashion—in adding Bach Remedies to standard psychiatric care for depression (“Bach...”, 2006). I have not been able to track the original studies down directly, though, so I cannot really comment on either of them much more than that, unfortunately.

There was another study that was only written up as a letter to the editor in a journal, and hence not peer-reviewed and held to the higher standard of publication required of a normal journal article (Muhlack et al, 2006). But this study was placebo-controlled and double-blinded, according to its authors. In it, the authors studied the effect of Rescue Remedy on 98 psychiatric patients suffering primarily from anxiety, with an underlying schizoaffective disorder (Muhlack et al, 2006). These patients were given either Rescue Remedy or a placebo for three days and then measured on a reduction of anxiety, but no statistically significant differences were reported between the two groups (Muhlack et al, 2006). This is not too surprising, really, since anxiety is such a broad term—potentially incorporating any and all of the Bach Remedies, when you really think about it. So three days on a combination of five of them is hardly definitive (especially when treatment wasn't individualized to the patients' needs). Remedies such as Holly (which is one of the prime Bach Remedies for schizophrenic-like feelings of suspicion), White Chestnut (for repetitive thoughts), or Aspen (for vague feelings of fear and anxiety), might have been helpful additions in this particular case, if individualized treatment was not available.

But at any rate, as mentioned previously, I am including every study that I have come across (however well or poorly conducted), so that I cannot be accused of selectively presenting the evidence one way or another. To that end, I have come across informal reports of a German study involving 700 people taking the Bach Remedies, though again in a non-blinded fashion (“Summaries...”, N.D.). This study was performed by Mechthild Scheffer, the author of one of the best known Bach Remedy guidebooks. Therefore, it might safely be considered as being at a higher chance of bias than a study performed by an independent outside observer. The results were said to be “positive”, for what that's worth, though I have yet to find the original study (“Summaries...”, N.D.). Returning to reports of case studies, those in-depth studies of individuals, Masi reported some success he had in treating two of his patients suffering from severe longstanding depression (greater than two years in duration) (“Bach...”, 2006). One of these patients had tried three different types of depression medications with no success. Both patients were females in their 40s, and were given Bach Remedies individualized to their respective moods. These two patients responded remarkably well, with their scores on the Beck Depression Inventory dropping from 12 to 2 in one patient, and from 35 to 11 in the other, over a period of 12 weeks. Considering that these were two patients with treatment resistant depression, the results were quite striking indeed. It also hints at the Bach Remedies having an

effect on their own, apart from placebo. This is because—after taking so many different medications without success, as with one of the patients—why would yet one more treatment suddenly kick the placebo response in to such a high degree (“Bach...”, 2006)?

But before I move onto some of the recent, fairly compelling, Bach studies (largely conducted in Cuba, Brazil, and Taiwan, though) there are several more studies that are worth examining in some depth. Two of these studies involved attention deficit hyperactivity disorder (ADHD). The first was a very small, 10 person study involving children aged 5-12 that had such severe ADHD that they were partially hospitalized for their condition (“Bach...”, 2006). During the study, they continued to receive their traditional medications along with the addition of either Bach Remedies or an otherwise identical placebo. The combination of Bach Remedies included Rescue Remedy, Vervain (for over-enthusiasm), Crab Apple (presumably included for its ability to help us avoid fixating on small problems at the expense of the greater whole), and Walnut (for protection from various outside influences, such as pressure or excitement that distracts us from what we should otherwise be doing). These Bach Remedies were given to one group of five children, and the placebo to the other group of five (“Bach...”, 2006).

Though a tiny study, and more accurately described as a pilot study than a real study (as with many of the studies that have been done on the Bach Remedies), the results were very interesting (“Bach...”, 2006). In the Bach Remedy group, after the three month trial period, three of the five children were no longer hospitalized at all, and in fact had managed to go off *all* of their medications, traditional or otherwise. The other two in the group were relatively unchanged from before the study period. In the placebo group, however, three of the children not only stayed on their traditional medications but had gone on to full inpatient hospitalization, while the other two children were also relatively unchanged from the beginning of the study period (“Bach...”, 2006). This is another small clue that the Bach Remedies might be helpful in some way—at least as an adjunct to traditional therapies. It is also certainly a study worth reproducing with more participants, utilizing the same Bach Remedies that seemed to show an effect in this study (if individualized treatment is not a realistic option). This is especially true considering that this study also experienced a high drop-out rate among participants before the study officially ended (though perhaps because the Bach Remedies did the trick, and hence they were no longer needed?) (Thaler et al, 2009).

A larger study conducted in Israel, by Pintov et al from 2005, involved 40 children with much less-severe ADHD, aged from 7 to 11 years old. This study involved only Rescue Remedy versus a placebo (without the Vervain, Crab Apple, and Walnut seen in the successful study above). But of the 40 children initially taking part in the study, 17 had dropped out by the end (Pintov et al, 2005). This, of course, somewhat clouded the results and led to the study being at a high risk of bias, according to the Thaler et al review (2009). At any rate, possibly due to the high dropout rate, there was no statistically significant difference detected between the two groups, though both groups seemed to improve over time (Pintov et al, 2005). As the Nelsons’ review points out, though, Rescue Remedy by itself is probably not the right choice of Bach

Remedies for ADHD in the first place (“Bach...”, 2006), and I happen to agree with that statement. This is because, in my opinion, the only Bach Remedies in Rescue Remedy that would be expected to help with ADHD would be Impatiens (which is for being impatient and rushing from one thing to the next) and Cherry Plum (and then only if the ADHD was caused by uncontrollable destructive urges, as opposed to merely being distracted/excited by different things). Potentially more useful Bach Remedies for ADHD include the aforementioned Walnut, Vervain, and Crab Apple seen in the previous ADHD study, along with several others. These include Scleranthus (which helps us to be decisive and stick with a choice—such as what to focus on), Chestnut Bud (which helps us to become mentally more focused), and Heather (for when we constantly need to get attention by being loud, acting out—and for generally just not noticing the needs of others/the social milieu we are immersed in). Agrimony (for helping us to face unpleasant situations or feelings) might be needed in such cases, too. This is assuming, of course, that a desire to avoid experiencing unpleasantness contributed to our never paying attention to one thing for too long in the first place.

So, what we have here is yet another example of a study that doesn’t really evaluate the Bach Remedies properly in terms of the basic principles of the Bach system. Worse, it is also one that utilizes questionable methods of reporting and evaluating study outcomes—the subjective reporting of improvement by the student’s teachers, as opposed to parents or the children themselves (Pintov et al, 2005). But, despite those flaws, skeptics seem happy to draw sweeping claims about the ineffectiveness of the Bach system as a result of this one potentially flawed study (i.e. Ernst, 2010). This study, along with many of the test-anxiety studies mentioned earlier, apparently had built-in scientifically-faulty methodology and practices from the start. Faults which—if the study happened to show a positive result—would then be mercilessly picked apart by skeptical scientists, anyway. But I digress.

### **The Most Recent/Compelling Studies Regarding The Bach Remedies**

Moving on from the various studies that looked at subjective reports of whether or not Bach Remedies have an effect on outlook or emotion, recent research has shown that certain Bach Remedies do seem to have direct physiological effects at a statistically significant level (i.e. Fringes et al, 2009; Yang & Wang, 2012). To me, this is much stronger evidence for the Bach Remedies than those based on subjective interpretations of wellbeing or stress reduction, valuable as those most certainly are. I say that because subjective accounts are clearly vulnerable to so many variables and influences, including how “tuned in” or perceptive an individual is (to be able to notice a shift in their emotional state in the first place). People also have the tendency to get fully engrossed in their current emotions—whatever they may be—and therefore fail to really put two-and-two together and realize that their mood is different than it was before Bach treatment, as I point out in my other book.

One small study from Austria addresses the above point to some extent, while also showing an apparently highly statistically significant result for the Bach Remedies compared to

placebo (Fringes et al, 2009). I should begin this discussion by pointing out that when studies make mention of a “p-value”, they are essentially referring to how likely a given outcome was to be “real” or due to the effects of chance alone. Various statistical techniques are invoked to arrive at this p-value, and typically a value of .05 or less is considered to be statistically significant (and therefore likely to be real) (Du Prel et al, 2009). Conversely, p-values higher than .05 are said to be likely due to chance alone, or not statistically significant. The closer one gets to zero the higher the probability that a result is real. A p-value of .05 would mean a study outcome had a calculated 1 in 20 chance of having been due to a potentially random occurrence, and therefore a 19 in 20 chance of having been due to a real effect from the thing being studied (converting from decimals to fractions). It is not a 50-50 toss-up, where a study either is or isn’t statistically significant—a result typically must be considered as only having a 5% or less chance of being due to a random outcome to be called statistically significant (Du Prel et al, 2009). In the case of this particular Austrian Bach study, the results were found to be statistically significant at a value of .000—essentially 100% guaranteed to be directly due to the actions of the Bach Remedies themselves (Fringes et al, 2009). Even if this p-value were due to rounding, where any value .00049 or less was rounded downward to zero, this would still mean the odds of this experiment showing a positive result by chance alone would be roughly 1 in 5000. So, it is pretty much showing a real, positive, result for the Bach Remedies (Fringes et al, 2009). This was also, as far as I can tell, one of the first well-designed studies to show a direct physiological effect from the Bach Remedies.

In it, the authors examined “rouleaux formation” (Fringes et al, 2009). This is, roughly speaking, the natural clumping together of red blood cells when they are in a “relaxed”, lower-blood pressure state—as allowed for by the vasodilation of blood vessels. These rouleaux formations automatically begin to form when conditions are right in the blood. But they go away under stressed, high blood-pressure situations, as the turbulence and pressure in the blood cause the red blood cells to automatically come apart from one another. In this particular experiment, 49 participants were measured for baseline rouleaux formation (via blood work analysis). 17 of these participants were eliminated from the start because of their high levels of rouleaux formation to begin with. The remaining 32 participants were then randomized into two groups: one receiving Rescue Remedy and one receiving an otherwise identical placebo. The patients were then given a single, 4-drop, dose of either Rescue Remedy or the otherwise identical placebo. Patients were then once again measured on rouleaux formation in their blood. Impressively, the Rescue Remedy group showed a dramatic increase in rouleaux formation among all sixteen participants, indicating that vasodilation (and hence some degree of relaxation) had occurred. Meanwhile, only 2 of the 16 patients in the control group showed enhanced rouleaux formation, and they only matched the degree of the increase seen in the 5 lowest-responding participants in the Bach group (Fringes et al, 2009). So, something in the Rescue Remedy caused a clear and measurable physiological effect. Just to better follow up on this study in the future, researchers could test each individual component of Rescue Remedy

separately against placebo in this regard. That way, the individual Bach Remedy (or Bach Remedies) that caused this particular effect could be specifically identified.

At any rate, as any Bach Remedy user knows, some people seem to be able to consciously spot the effect the Bach Remedies have on them, while some people seem to report no change whatsoever (even if others can occasionally notice an outward change in their behavior, anyway). The authors of this study note that other scientific research has shown that an increase in rouleaux formation is not always associated with a subjective impression of increased relaxation (Fringes et al, 2009). Thus, it is possible to take a substance that physiologically relaxes you but, depending on your perceptive ability, you may or may not be able to notice it (Fringes et al, 2009)! That pretty much helps to counter some of the criticism that arises when people say they took the Bach Remedies but didn't notice anything. The Bach Remedies could still very well have been working anyway. Just in a more subtle way than some people are used to, but potentially leading to real physiological changes as a result—presumably even more so after cumulative exposure to the Bach Remedies over time.

Another small study (very small, in this case, and again more akin to a pilot study) comes from Taiwan. It involved the use of Rescue Remedy to measure heart rate variability (HRV) in response to healthy women taking it (Yang & Wang, 2012). HRV is an important measurement, as it shows whether or not the sympathetic nervous system (the part of the nervous system responsible for physiological arousal) can be sufficiently shut down by the parasympathetic nervous system (the part of the nervous system responsible for allowing rest, relaxation, and digestion to occur, among other things—as detailed in chapter 1) (Kawachi, 1997). Low HRV has been associated with problems such as chronic stress and various health problems, including an increased risk of coronary heart disease (Kawachi, 1997). In this study, 7 healthy women were given Rescue Remedy or placebo in a crossover fashion (Yang & Wang, 2012). This meant that they first got one of the two treatments but then switched to the other treatment halfway through the study—with a one month break in between the treatments to allow things to reset, in this particular case. I should state for the record that if the Bach Remedies are working in an epigenetic fashion, then a crossover design might not be the best way to test them. This is because the effect could carry on after treatment had switched to placebo, clouding the results (or at least giving the subsequent placebo-group more of an apparent response from treatment than it would have otherwise had). Though given a sufficiently long break between treatments, it might not be too much of a problem (assuming any epigenetic effects from the Bach Remedies were at least partially undone by the detrimental effects of future stress, poor diet, lack of exercise, etc). If they are not epigenetic modifiers, then a crossover design could in fact be a good way to test them. But until their method of action is known for sure, why risk it? At any rate, HRV was measured, and it was found that parasympathetic activity (the type that relaxes the body, the opposite of the type involved in the fight-or-flight stress response) increased in a statistically significant manner after taking Rescue Remedy for the month, as compared with taking the placebo (Yang & Wang, 2012).

The authors of this study followed it up with another study in 2015, this time using another crossover design (Yang et al, 2015). This study showed the same sort of improved parasympathetic-nervous system activity and improved HRV from taking Rescue Remedy seen earlier. This time, though, they were tested after being somewhat “stressed” with an observed timed mathematical exercise (supposedly known to elicit stress in test subjects). This trial was larger than the previous one, too, this time involving 30 women. But it once again resulted in a statistically significant outcome in favor of Rescue Remedy over placebo when it comes to improving HRV (Yang et al, 2015). If the Bach Remedies really can help increase HRV as these two studies show (Yang et al, 2015; Yang & Wang, 2012), then they are therefore by definition healing agents—since they would be able to help eliminate some of the associated health risks that come from having low HRV in the first place.

The remaining studies involving the Bach Remedies that I have come across were conducted primarily in Cuba and Brazil. A person with a skeptical nature might feel inclined to doubt or even dismiss out-of-hand the validity of work done in these countries, Cuba especially, just because the studies were not always published in English or in more prestigious journals. But this shouldn't automatically invalidate their results. After all, science is science, and practiced correctly should be reproducible anywhere. And so hopefully some of the interesting findings that have been made there will encourage just such replication experiments in the U.S. and Europe. That won't stop skeptics, of course, because (once again) Ernst even criticized a Cuban study published in English—in an American journal—because, in his words, “It was published by authors from Cuba who I know nothing about” (2015, paragraph 7).

One caveat is that I was only able to translate many of these articles (from either Spanish or Portuguese) into English via Google-Translate, since I don't personally speak either of those languages. Fortunately, though, the abstracts were almost always written in English to begin with, so that I know the overall picture is indeed correct, and not possibly the result of a translation error or misinterpretation on my part. Though an occasional detail here or there might certainly be open to retranslation. A few of these Cuban and Brazilian articles were written in English and published in mainstream Western journals, too, for the record.

To begin with, I will start with a small Cuban study of the Bach Remedy White Chestnut. It is indicated for repetitive, broken-record or song-stuck-in-head types of thoughts. In this experiment, 70 participants suffering from intrusive repetitive thoughts were randomized and assigned to one of two groups—one taking White Chestnut, and one taking an otherwise identical placebo (Rodriguez-Martin, 2012). Participants took their treatment over a 2 week period, 5 times a day (every 4 hours that the participants were awake). Participants were tested before and after the experiment on a special standardized scientific questionnaire designed to ascertain the severity of repetitive thoughts. Those in the White Chestnut group reported a statistically significant level of overall improvement compared to placebo, and an especially dramatic decrease in intrusive thoughts (Rodriguez-Martin, 2012)—just as one might expect, since that is what White Chestnut is indicated for.

Interestingly, the study also mentions that Bach Remedies are well regarded in Cuba, and so that factor might even have helped increase the response seen from the placebo group (Rodriguez-Martin, 2012). At any rate, in terms of statistical significance, the p-value for the difference in eliminating intrusive and unwanted thoughts between White Chestnut and placebo was a very strong .001 (only a calculated one in a thousand chance of it having occurred at random) (Rodriguez-Martin, 2012). In addition, a second, nearly identical, study to the one above focused on White Chestnut's ability to reduce intrusive unwanted thoughts in elderly populations (aged 61-79) (Rodriguez-Martin et al, 2012). This study also showed a statistically significant reduction in repetitive and intrusive thoughts in the White Chestnut group as compared with placebo. This time the p-value was a strong .005 (only a one in 200 shot of having occurred by chance alone) (Rodriguez-Martin et al, 2012).

In the rouleaux formation study we saw a Bach Remedy-induced physiological change that might otherwise escape a person's conscious perception (Fringes et al, 2009). Similarly, in the first of those two White Chestnut studies it was found that the test scores of improvement seemed to be even greater than the conscious subjective reporting of improvement by individuals, according to the study's author (Rodriguez-Martin, 2012). Assuming my translation of that statement was indeed correct, that means that this is further proof that the Bach Remedies should not be dismissed just because someone does not subjectively report feeling an improvement right away. Things could still be changing that they have simply not yet become consciously aware of—though it is objectively measurable in the written assessments these people subject themselves to (Rodriguez-Martin, 2012).

A Brazilian experiment looked into whether Rescue Remedy could help control cardiovascular risk factors (as studied in rats) (Resende et al, 2014). This was the first of the two Cuban Bach studies that Ernst commented on via his website, as reported earlier, where he attached various seemingly unwarranted derogatory tags to it (such as “unreason” and “irrationality”) (2014). In this study, 18 rats were split into 3 groups of 6 rats each (Resende et al, 2014). One group received mineral water, one received a mixture of half water and half Rescue Remedy, and one received straight Rescue Remedy—all of which were dosed orally via a gastric tube. After receiving doses twice a day for 20 days, all of the animals were, sadly, killed and analyzed for signs of changes to heart health. Though I always hate to have to reference studies done where animals are hurt or killed (especially to test a healing system!), at least their deaths were not totally in vain. I say this because, according to the study's authors, the group getting the full dose of Rescue Remedy had statistically significant lower bodyweight and healthier blood sugar levels than the placebo group. And both Rescue Remedy groups had statistically significant higher levels of HDL cholesterol (the good kind) and lower triglycerides than the placebo group (Resende et al, 2014).

The authors of the study took that as an indication of possible direct physiological effects from the Bach Remedies (Resende et al, 2014). Though I feel I should state for the record that it is possible that the Rescue Remedy may have simply reduced the subjective sensation of stress in



the rats, and hence reduced the activation of their stress response system accordingly. If that were indeed the case, then Rescue Remedy conceivably might be able to cause many of those reported health effects even if it didn't have any direct physiological effects in and of itself. One cautionary note with this study, though, was that it was unclear whether the placebo control accounted for the alcohol present in the Rescue Remedy (Resende et al, 2014). Because of this, some skeptics correctly took this as an opening to attempt to invalidate the study, as can be seen in the comments sections of Ernst's website (Ernst, 2014). There was also some question as to the blood sugar levels of one of the Rescue Remedy groups because, unless it was a typo, it appeared to be quite low (and not necessarily healthier than the other groups) (Ernst, 2014; Resende et al, 2014).

The sample size of this experiment was small, of course—as with most pilot studies (Resende et al, 2014). But the results still hint at a possible physiological effect for the Bach Remedies, and they certainly illustrate the need for further research on the topic. It is also especially interesting to note that the group getting the full dose of Rescue Remedy seemed to respond more strongly than the group getting the half-dose of Rescue Remedy (Resende et al, 2014). If this result is accurate, it seems to argue for a conventional method of action for the Bach Remedies—whatever that might be—as opposed to an energetic method of action. This is because, energetically-speaking, a lower dose of a given substance might be expected to produce as good or even better results than a higher dose of a given substance (Gerber, 2001). Just for the sake of argument, let us assume for a minute that the Bach Remedies are acting via a conventional route. And let us also assume that only the tiniest of doses are needed to produce an effect. In this scenario, there would still be some point in terms of dosage where the Bach Remedies would be expected to produce a slightly better result at some higher doses as compared to some lower doses. This outcome would only be seen when the dosage range was right near the cutoff point between having a full and only partial effect, of course, however low that point was in terms of actual dosage. This would be true even if experience has shown that only very small doses are needed to produce that full-size effect in the first place—so it is probably something worth accounting for in future experiments. It also presents yet another opportunity to explore how the Bach Remedies work, such as by precisely figuring out the smallest dose needed to result in a full effect-size being seen.

Another Brazilian study, from 2006, dealt with whether certain Bach Remedies could help deal with a host of psychological problems (De-Souza et al, 2006). These included examining their ability to help with depression, to reduce anxiety, and to increase sleep—utilizing a mouse-model of those feelings and activities, as is standard scientific procedure. The experimenters took this study one step further by not only comparing the Bach Remedies to placebo but also to conventional antidepressant and tranquilizer drugs in a couple of instances, to see how comparable they were in terms of effect size. As a side note, the Bach Remedies in this trial were prepared without alcohol, so that the alcohol could not possibly interfere with or confuse the outcome of any of the experiments. The first part of the experiment dealt with

depression, and utilized a standard model of testing it in mice: the forced swim test. This is where, cruel as it sounds, mice are dropped in water with no possible escape to a perch or other resting area, meaning they either have to swim or float the entire time. It is not necessarily inhumane, though, apparently, as after a while the mice just give up looking for a way out and end up just floating there safely until researchers remove them. The speed at which the mice give up is believed to be associated with their level of depression, so the sooner they give up the more depressed they are said to be. This is a standardized test in the scientific world, and not something totally off the wall as it might otherwise sound to an outside observer (De-Souza et al, 2006).

At any rate, the mice in this part of the study were either given the Bach Remedy Gorse (which is for when you have given up hope of ever really getting better, or of your life situation improving), an identical placebo, or Imipramine, which is a tricyclic antidepressant (De-Souza et al, 2006). The mice taking Gorse in this study were shown to stay active a statistically significant longer amount of time than the placebo group before giving up. But they did not stay active as long as the Imipramine group (which itself showed a statistically significant longer time spent searching than the Gorse group). But there was still a clear antidepressant-like effect to be had from the Gorse, beyond the level of placebo (De-Souza et al, 2006). I probably should take a moment to note that Gorse is but one of the possible applicable Bach Remedies in a situation such as this. Mustard (not experiencing pleasure), Wild Rose (for apathy or resignation), Gentian (for not persevering in the face of obstacles or setbacks), and Sweet Chestnut (for extreme anguish) are among other Bach Remedies coming to mind that might be useful in this sort of case. So, in that regard, I would venture that this experiment showed a rather encouraging result. In fact, while reading this I was thinking that if scientists are going to perform these types of forced swim tests anyway, it might be worthwhile to give mice that have given up and are just floating there either Wild Rose or a placebo, to see if that starts them searching again. Anyway, this was just an idea I came up with on how to possibly test it while reading this study, and that I figured was worth mentioning in case someone was motivated to replicate or expand upon this type of study. Of course, there's always the possibility that the mice were just smart enough to figure out there was no possible escape—and hence why bother?—and therefore this was not a true test of depression but rather of their logical ability. But, at any rate, tests such as these are still considered a valid test of depression in the scientific world.

A second part of the same study involved whether a combination of three Bach Remedies could help improve sleep as compared to an otherwise identical placebo (De-Souza et al, 2006). This mixture of Bach Remedies included White Chestnut, which is for repetitive and intrusive thoughts; Agrimony, for the inability to face painful realities and the restlessness/mental torture that can cause within us; and Vervain, for feeling worked-up or hyper. The authors examined two components of sleep in this experiment, sleep latency (how long it takes to fall asleep) and total sleep time. Both measures showed a strong statistically significant change ( $p < .001$ , where  $p < .05$  (as previously mentioned) is considered statistically significant—meaning there was less

than a 1 in a 1000 chance that each of these outcomes occurred at random). This means that the Bach Remedy consuming group of mice fell asleep faster, and slept longer overall, than the placebo group (De-Souza et al, 2006).

This study used an alcohol-free Bach Remedy dilution for the experiments, and mineral water as the otherwise identical placebo (De-Souza et al, 2006). Though in this part of the experiment the authors also separately used alcohol diluted to the levels typically found in the Bach Remedies to see if that amount of alcohol would affect sleep patterns more than the water-based placebo control, but it did not. The authors took this as further proof that—if one were taking traditional Bach Remedies to help them sleep at night—the alcohol wouldn't likely be the cause of any change in sleep patterns in that case, either. Furthermore, just to clarify, in this part of the test the Bach Remedies were apparently only compared to placebo, and not to another conventional medicinal sleep aid, as far as I could tell. Personally, I find this experiment also interesting in that—assuming for a minute that the Bach Remedies in question actually do work as advertised—it implies that mice can subjectively feel hyper, have repetitive thoughts, and can feel mentally tortured or conversely at peace (De-Souza et al, 2006)...since addressing those feelings apparently affects their sleeping ability!

Another part of this experiment involved the use of Agrimony alone in terms of seeing if it helped reduce anxiety (De-Souza et al, 2006). In this test, mice were put in a device that, by its very design, encourages only those mice that are feeling less-anxious to explore the more open areas of the device, while allowing anxious mice the opportunity to remain in a safer-feeling enclosed area of the device. The time spent in the open areas of the device versus in the confined areas, along with the type of activity demonstrated in those respective spaces, allows researchers to attempt to measure/infer how much a substance reduces anxiety in a given mouse—which would otherwise lead them to generally stay somewhat immobile in the more secure areas (De-Souza et al, 2006). I personally wonder if Bach Remedy Mimulus (for known fears, such as of predators or open spaces) might be more applicable to this situation. But the Agrimony consuming group—perhaps by helping the mice confront and face what is challenging to them?—seemed to show a statistically significant reduction in the time spent in the safer areas of the enclosure than the placebo group, at least for one part of the experiment. The diazepam used as a test of a traditional medication outperformed the Agrimony in terms of statistical significance, though. Again, this is perhaps because Agrimony is not the only (or most) needed Bach Remedy in a case such as this. But the Agrimony still showed an effect that exceeded placebo, implying a real effect was to be had from it (De-Souza et al, 2006).

Finally, the experimenters used drugs such as amphetamine and apomorphine to induce schizophrenic-like behavior in mice (De-Souza et al, 2006). Due to these medications, the mice entered into a rigid, cataleptic-like state. Clematis was given in an attempt to undo these effects—as it is for distant, sleepy, or daydreaming states of mind—but no effect was seen. It is possible that, if I am free to speculate a little once again, the Clematis could still be working in a real yet simply more subtle way than those medications. Given enough time with a naturally-

occurring cataleptic state then it might possibly lead to a noticeable improvement. But in the short term the powerful effect of the conventional drugs used might have overshadowed any effect it had. It is also possible that even though outwardly the behavior mimicked a negative-Clematis state (distant, mentally-elsewhere), the actual states of mind the animals were going through could have been very different. It is possible that they may have been experiencing things such as panic or terror at not being able to move; feeling like they were going out of their mind; feeling hopelessly stuck in repetitive thoughts; experiencing extreme unbearable agony; or were simply mentally-elsewhere for other reasons than negative-Clematis ones (i.e. thinking of the past), etc. In this scenario, they would not be expected to show improvement without taking the correct corresponding Bach Remedies (Rock Rose, Cherry Plum, White Chestnut, Sweet Chestnut, Honeysuckle, etc—maybe even Impatiens or Vervain, since amphetamine was involved, implying an amped up state of mind). But, at any rate, overall the authors concluded that it is possible, in theory, to deduce what sorts of physiological pathways the Bach Remedies might work on via experiments such as these (De-Souza et al, 2006)—which would be interesting to follow up on, scientifically speaking.

There have also been several non-placebo-controlled studies from the various Spanish-language journals worth mentioning briefly, if only for completeness sake. One of these involved the topical use of the Bach Remedies to deal with contact dermatitis (Sanchez Hernandez et al, 2009). Since the study is only observational in nature, and not placebo-controlled, it is of little scientific value in convincing someone to believe in the power of the Bach Remedies that is otherwise skeptical. But it is interesting, and perhaps worthy of a proper placebo-controlled study on the subject, since 95.1% of patients showed a significant improvement in their condition within 10 days—and 82.2% of patients noticed an improvement within just the first 24 hours. The doctors in the study—used to seeing the typical course of such cases of contact dermatitis when utilizing conventional medicines, presumably—described the Bach Remedies as being clearly effective (Sanchez Hernandez et al, 2009). Another uncontrolled, observational, study involved using Rescue Remedy to help stabilize high blood pressure in 40 patients (admitted to the ER) also showed good effect in 93% of patients (Matos & Garcés, 2014). There was also a very small 25-person study that involved Rescue Remedy's ability to help deal with “school stress”—which is different and broader than test-anxiety—over a 21 day period (del Toro Añel et al, 2014). This study was not placebo-controlled or blinded, apparently, so its results are therefore once again scientifically questionable. But a statistically significant reduction in stress among the students was reported (del Toro Añel et al, 2014).

I also came across a placebo-controlled study involving the Bach Remedies and the attempt to use them to enhance memory function (in students), but the experimenters found no statistically significant differences between the two groups (Bergado Rosado et al, 2009). This could conceivably be because of the methods used to test the subjects (a word recollection test). Or it could be because getting a better memory probably involves a good deal more work and time to become truly alive and aware and focused in the moment than just the 10 short days of

treatment used in this study. It also might be because some of the Bach Remedies selected for the trial—Red Chestnut (for worrying about the safety of others) and Wild Oat (for finding your life path and what is most fulfilling)—don't seem particularly relevant to improving one's memory. The three Insufficient Interest In Present Circumstances-category Bach Remedies used (Clematis, Honeysuckle, and Chestnut Bud) might conceivably be very useful for the condition, however (Bergado Rosado et al, 2009). Larch (for confidence) and Cerato (for being sure of your answers) would probably have been useful additions to the mix, too, in my opinion. But at least the researchers in Cuba are taking the time to investigate the Bach Remedies in a variety of applications!

There was also a double-blind, placebo-controlled study from Brazil that attempted to see if the Bach Remedies could help with spiritual development among college students suffering with “common mental disorders” (Ruth, 2012, pg. 185). Outcomes were evaluated based on the results of a standardized questionnaire given to the students. Though the results showed a statistically significant result in favor of the Bach Remedies, this experiment suffered from a high dropout rate over the three separate (lengthy, three month) reporting periods (Ruth, 2012)—thus potentially seriously affecting the validity of the results.

More encouragingly, when it comes to potentially valid results being obtained, there was also a randomized, double-blind, placebo-controlled study from Cuba that investigated whether or not the Bach Remedies could help eliminate thumb sucking in first graders (Martínez Ramos et al, 2007). In it, 60 first graders (between six and seven years old) were given a mixture of 5 Bach Remedies 6 times a day (or more often, as needed, when thumb sucking was active) or an otherwise identical placebo (Martínez Ramos et al, 2007). In addition, both groups received standard psychotherapy and other traditional treatments. So, essentially, this study examined if Bach Remedies could speed the elimination of thumb sucking when added to traditional methods of doing so. The Bach Remedies selected were Agrimony, Cherry Plum, Chicory, Impatiens, and Walnut. I take it the Agrimony was included because it was used to help the children face whatever was making them anxious (or in need of comforting) enough to want to suck their thumb in the first place; Cherry Plum to help resist the urge to do so; Chicory because of needing a feeling of safety and love and nurturance; Impatiens so as to not rush to get home to mom, so as to better enjoy their surroundings (?); and Walnut to help break free from the past and have a new start, away from the suckling phase of their existence. At any rate, the children were followed up after 7, 15, and 21 days, and then again at the 3 and 6 month marks. By the end of the study period, a rather ominous sounding 66.6% of the children in the Bach Remedy group had given up thumb sucking completely, while only 20% of the control group had (Martínez Ramos et al, 2007)—a strikingly large difference!

So, the Bach Remedies seemed to help in this case, even though they weren't directly individualized to each child (Martínez Ramos et al, 2007). So I am once again forced to wonder if a more individualized approach might not have shown even better results. But at any rate, this study shows how Bach Remedies can possibly help enhance certain traditional therapies, and

make them more efficient (Martínez Ramos et al, 2007). This is in keeping with my own personal notion of the Bach Remedies as (also) serving like “super-facilitators” for other therapies. In this regard, I feel they can potentially speed the results of a large number of other therapies and modalities. This includes (in my experience) things such as meditation, massage/bodywork, and even conventional medications. I would speculate that they do this by prepping the body, physiologically speaking, to be able to make quick and often lasting changes due to the effects of these other therapies/activities.

At any rate, one of the more interesting studies that I have come across regarding the Bach Remedies dealt with their effects in controlling inflammation (Suárez Saira et al, 2013). Once again rats were used, and the experiment was randomized, blinded (not double-blinded, *per se*, since the rats presumably didn't know what they were getting in the first place), and placebo-controlled. In this study, rats were divided into 5 groups: one receiving Bach Remedy Beech; one receiving Bach Remedy Vervain; one receiving Rescue Remedy; one receiving a placebo; and one receiving a traditional drug known to have antihistamine (and hence anti-inflammatory) effects (Benadryl). The Bach Remedies were applied topically using a petroleum base. There were 30 Wistar-rats used in the study, so 6 were put into each group for testing. They were then given an injection into one of their paws with the medication Dextran, in order to elicit a known inflammatory/swelling response due to that injection. Of course, if the experimenters had done this experiment on hundreds of rats (and gotten the same results) we could draw firmer conclusions. But as a pilot study the results were certainly encouraging enough, and indicative of the Bach Remedies possible physiological effect: the rats in the Beech group showed prophylactic protection from inflammation and swelling from the start, dramatically so, and experienced a large reduction in inflammation and swelling overall compared to placebo. The Vervain group also showed reduced swelling and inflammation overall, but the effect did not really kick in with it until the three hour mark in the study. This indicated that a different physiological mechanism was being affected than in the Beech group, according to the study's authors. Meanwhile, Rescue Remedy was shown to have no effect on inflammation in this case any more than the placebo group. Especially noteworthy was the fact that the inflammation reduction in the Beech group was shown to be nearly as strong as in the anti-inflammatory medicine group, and kicked in earlier than the anti-inflammatory medicine group. The authors of the study point out that, due to the method of action (preventing initial inflammation), the Beech might have been working on (or blocking) the body's initial release of histamine and serotonin by the immune system in response to the injection. The authors also speculated that Vervain, which didn't kick in until the three hour mark of the inflammatory response, must be interacting with or interfering with the more advanced stages of the inflammatory process, which they unfortunately don't go into the details on (Suárez Saira et al, 2013).

Clearly, if this small study is to be believed, then at least some of the Bach Remedies can indeed have direct anti-inflammatory effects (Suárez Saira et al, 2013). They therefore could conceivably be of great value in healing. Since many health problems are caused by chronic

inflammation, anyway, there is no reason to believe—if these results are shown to be true in further experiments—that the Bach Remedies might not be able to help with a great number of health problems, by combating this underlying inflammation (Daruna, 2012; Suárez Saira et al, 2013). This means that the Bach Remedies could potentially help people to eliminate various autoimmune problems, as well, which are often driven by inflammatory processes run amok (Daruna, 2012; Suárez Saira et al, 2013). It also helps give credence to some of the results Dr. Bach obtained—such as helping a patient with severe rheumatoid arthritis be able to walk five miles without crutches after a year of Bach Remedy treatment—by showing a potential physiological method of action for at least some of the Bach Remedies used (Suárez Saira et al, 2013; Weeks, 1979).

These particular Bach Remedies (Beech and Vervain) were likely chosen for this study because of the perceived connection that exists between mental irritation/feeling critical (Beech) and over-enthusiasm/hyperactivity (Vervain) with inflammation on the part of the study's authors (Suárez Saira et al, 2013). Or at least that's my guess. But the rats were not directly assessed for their mental outlook, of course. So it is possible that other Bach Remedies might have matched up even better with whatever these rats were feeling (in response to being exposed to the irritating agent they were injected with) than either Beech or Vervain did. Bach Remedies which might then, theoretically, have shown as good or even better results than the ones tested here. But at any rate, it is a very important finding—and one that shows the Bach Remedies can potentially directly affect the functioning of the immune system (Suárez Saira et al, 2013). For those seeking to replicate such studies, but that don't like the idea of testing on animals, similarly designed anti-inflammatory studies could easily be conducted on consenting humans instead.

The final—and most recent—study I have come across dealt with whether or not a combination of 5 Bach Remedies could help patients suffering from carpal tunnel syndrome (CTS) (Rivas-Suárez et al, 2015). Unlike several of the previous studies I have reported on, this study was from an American journal and written entirely in English (so I know for sure that I have all the details correct). This is the study about which Ernst complained he didn't know the scientists involved, and he also went on to say it was written up in one of the worst journals he knew of (Ernst, 2015). What Ernst didn't point out in that post was that he has personally had at least 6 of his own articles published in that same journal—and the rather important fact that he was one of the journal's founding editors! Not to pick on Ernst too much, but it seems as though he will go to great lengths to discredit the Bach Remedies rather than examine the science for what it is worth. But he did leave open the possibility of this study changing his mind, apparently, as he said he didn't know what to make of this new study (since it showed such a profound healing effect for the Bach Remedies, as I will get to next) (Ernst, 2015). He also stated that if he had been the editor in charge he:

“would have asked for the original data and had them re-analysed by an independent statistician. As we cannot do that, our only option is to apply

common sense and wait for an independent replication before conceding that BFR are effective” (Ernst, 2015, paragraph 8).

Before we give Ernst too much credit, though, I should probably point out the fact that he also inexplicably filed that study under the heading “scientific misconduct” on his website (Ernst, 2015).

Anyhow, in this case, the Bach Remedies were applied topically to the wrists (Rivas-Suárez et al, 2015). This is in accordance with Dr. Bach’s recommendation to apply the Bach Remedies topically whenever there is a physical complaint. Unlike Dr. Bach’s recommendations, however, the Bach Remedies were not matched to each patient’s mental state. Instead, all participants were given a special combination of the same 5 Bach Remedies: Star of Bethlehem, Clematis, Hornbeam, Elm, and Vervain. The authors stated these were included because of their perceived benefits for recovering from trauma, reducing tingling and numbness, recovering one’s strength, pain relief, and anti-inflammatory properties, respectively. Of course, these indications are not necessarily in keeping with Dr. Bach’s recommendations, since some of the Bach Remedies are being prescribed for physical symptoms instead of mental ones. So, once again we have a non-standard approach to prescribing the Bach Remedies. But at least they used a different set of 5 Bach Remedies than Rescue Remedy, which is a nice change to see (Rivas-Suárez et al, 2015).

At any rate, this time the study authors used three different experimental groups: a placebo group, a Bach Remedy group, and then a non-blinded Bach Remedy group (Rivas-Suárez et al, 2015). The first two groups were double-blind (as would be expected), while the third group was told they were in fact taking Bach Remedies. This was done in order to judge the level of response likely to be seen in clinical use with real patients. All groups were told to use their cream (Bach Remedy or placebo) morning and night for 21 days while awaiting their surgery dates. There were 14 members of the placebo group; 16 members of the blinded-Bach group; and 13 members of the non-blinded Bach group. A variety of physical measures were taken at the start and conclusion of the study, both by doctors and as a result of self-reporting by the patients themselves. After the study period, it was found that in many of the measures both Bach groups (blinded and non-blinded) showed dramatic improvement over the placebo group, while some of the measures remained relatively unchanged. Importantly, it was found that both Bach groups improved at a statistically significant rate for both pain reduction and reduced tingling sensations as compared to placebo. The p-value for each of these measures was .000 (a 1:5000 or less chance of each of these individual results having occurred at random). There was an even larger effect from the non-blinded Bach group than the blinded Bach group (as might be expected, especially considering the Bach Remedies are apparently well regarded in Cuba). But both groups performed dramatically and undeniably better than placebo (Rivas-Suárez et al, 2015).



For example, of the 14 members of the placebo group, 0 reported recovering from their pain, and all reported the same levels of pain at the end of the treatment period as at the start (Rivas-Suárez et al, 2015). Meanwhile, 7 of the blinded-Bach group reported recovering from their pain while 9 stayed the same. In the non-blinded Bach group, 12 patients reported overcoming their pain, while 1 participant reported the same levels of pain after treatment as before. In terms of tingling sensations, only 1 member of the 14 person placebo group reported improvement, while 11 of the 16 blinded-Bach group members reported improvement, and 10 of the 13 non-blinded Bach group reported improvement. Perhaps most importantly, members of the Bach Remedy groups were far less likely to still need surgery at the end of the trial period than members of the placebo group. Only 1 out of the 14 members of the placebo group managed to avoid having surgery after the trial period. But 9 out of the 16 blinded-Bach group members avoided having to have surgery, and 12 of the 13 non-blinded Bach group members avoided having to have surgery. Considering that such strong results were obtained even without individualized treatment, and involved both subjective measurements of improvement and objective measurements made by doctors, I take this as further proof that the Bach Remedies are in fact directly capable of affecting our health (Rivas-Suárez et al, 2015)—just as Dr. Bach claimed!

### **To Summarize...**

As I hope to have shown via this comprehensive literature review of the Bach Remedy studies that have been conducted, the scientific research apparently shows that the Bach Remedies are not nearly as useless as some scientists have described them as being (i.e. Ernst, 2014). All the studies that have been conducted have been relatively small, and many were not conducted in accordance with the governing principles of the Bach system (or suffer from other problems with their design). But there have been more than enough positive results (in my opinion) from the well-designed studies to show that the Bach Remedies could very well cause physiological and/or mental effects. Therefore, I feel they clearly deserve at least some amount of further scientific scrutiny. This is especially true of the White Chestnut studies, the rouleaux formation study, the heart rate variability studies, the inflammation/physiological effect studies, and the carpal tunnel study. These were all seemingly well-designed studies, and they all showed a positive, highly statistically significant result for the Bach Remedies (Fringes et al, 2009; Yang et al, 2015; Suárez Saira et al, 2013; Rodriguez-Martin, 2012; Rodriguez-Martin et al, 2012; Rivas-Suárez et al, 2015). Leaving aside any of the other non-placebo controlled studies (most of which seemed to show an effect for the Bach Remedies), the results of these particular studies alone seem to indicate that there can be an emotional and/or physiological response from taking the Bach Remedies. The sweeping statements debasing the Bach Remedies made by researchers such as Ernst (2010; 2014) are not in fact supported by all of the evidence/studies that have been conducted on the Bach Remedies. While it is possible to cherry-pick studies for or against the Bach Remedies, using them to confirm one's own preconceived biases for or against alternative treatments, by looking at all the evidence there does in fact seem

to be something happening physiologically and/or emotionally as a result of taking the Bach Remedies.

Since studies automatically take into account the likelihood of an effect being due to chance alone, *any* of the studies that showed an effect beyond placebo effect would indicate that something is likely going on with the Bach Remedies. Quite a few of those studies, as mentioned above, have results that show only a 1:1000 to 1:5000 chance of having been the result of a random fluke outcome (Rodriguez-Martin, 2012; Fringes et al, 2009, Rivas-Suárez et al, 2015). Since only around 30 studies in total have been conducted on the Bach Remedies, it seems a bit of a stretch to conclude that such strong statistically significant study outcomes could be solely the result of blind chance! Overall, though, there is clearly not nearly enough research that has been conducted on the Bach Remedies. And there is nothing definitive in terms of proving the healing nature of Dr. Bach's system as a whole, of course, even if there are hints that it can work as advertised (i.e. the carpal tunnel and inflammation studies). Much of the research overall is faulty in design or methodology (such as not including a placebo control). But there is still enough well-designed research out there that it is impossible to make the blanket statement that Bach Remedies could not work, at least with a straight face and full academic and scientific integrity. These studies, on balance, seem to show that the Bach Remedies are affecting something within the body—illustrating once again that Dr. Bach was onto something in selecting them.

Apart from some widely-reported and (in my opinion) highly-flawed studies involving the Bach Remedies effect on test-anxiety, these studies have occasionally shown some very interesting results. Many seem to be hinting to a real and measurable effect from the Bach Remedies—sometimes even a profound effect. Most scientists studying the Bach Remedies seem to not really be all that familiar with the system, the Bach Remedies employed, or the basic prescription and treatment practices that go with it. So it is not too surprising to see such a mixed bag in terms of the results coming from some of the studies. Many were highly flawed from the get-go, such as some of the test-anxiety studies, while some of the Bach Remedy studies seemed very well designed and hard to argue with, such as the rouleaux formation one (Fringes et al, 2009). But as I hopefully have made clear, there has frequently been an effect seen beyond the placebo-level for the Bach Remedies (i.e. Fringes et al, 2009; Rivas-Suárez et al, 2015). If that is indeed the case, then the Bach Remedies very much deserve further scientific scrutiny—because it means they can in fact affect the mind and/or the body, at least in certain situations.

Even if—popularly speaking—science has until now largely closed the book on the Bach Remedies, scientists should take a fresh look at the subject because it is clearly possible to test the Bach Remedies effectively. In fact, much of the most recent hard-science work (conducted to nearly the gold standard of science, apart from a large sample size) that has been done seems to show that the Bach Remedies do indeed have an effect on the body and/or the emotions. This includes the two White Chestnut studies, the various mouse/rat studies, the carpal tunnel study,

and the rouleaux formation study (Fringes et al, 2009; Suárez Saira et al, 2013; Rivas-Suárez et al, 2015; Rodriguez-Martin, 2012; Rodriguez-Martin et al, 2012). With that, it becomes next to impossible to throw out the entire healing premise of the Bach Remedies. For if they can indeed impact the body, and aren't just useless (and too dilute to function) alternative therapies as some critics claim (i.e. Ernst, 2014), then who is to say what results might be found with a properly conducted experiment into their healing ability, using the governing principles of the Bach system? Only time will tell if researchers take up the challenge and do real substantive research on the Bach Remedies, or whether they allow them to languish unexamined behind the biases and preconceived notions of a skeptical scientific establishment. But assuming that even only one of the double-blind placebo-controlled studies that showed a physiological response was correct—and there were several—then the Bach Remedies clearly deserve some further amount of scientific scrutiny.

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