

# Real Ketones Study Results Overview

## Introduction

Real Ketones has and continues to invest significant funds into advancing the knowledge of exogenous ketones and the efficacy of its products using its patented Real Ketones Quad BHB. This Claims Overview provides our customers with a summary of two of our latest clinical studies that provide insight into how our Real Ketone products provide special benefits to those who use them.

## Human Clinical Study

### ***Blind Comparison of Two Different Compositions of Exogenous Ketones and Their Impact on Anxiety, Weight, Lean Muscle Mass and Cognitive Function***

by Gacio, J. Koche, L. Dituri, J.

### **Study Purpose**

The purpose of this study was to establish the effectiveness of two exogenous ketone products with differing BHB/MCT ratios in order to determine which compound had the greatest efficacy in reducing anxiety, decreasing body fat, increasing lean muscle mass and increasing mental acuity.

### **Study Design**

A normally distributed age range of both male and female subjects between 20 and 70 years of age who did not have hyperlipidemia nor diabetes and with a body mass index between 20 and 40 were selected as a study group. A power study was conducted in order to choose the appropriate sample size. Fifty-Seven actual subjects were finally recruited for the purposes of this study of which 9 were male and 48 were female, so this study is highly weighted to the female population.

Subjects were randomly divided into two subgroups, each group receiving a two-month supply of differing concentrations of Real Ketones Quad BHB-MCT powder. Subjects were blinded as to what Quad BHB-MCT mixture they would be receiving. Group 254 was given a supplement formulation with one ratio of Quad BHB to MCT and Group 255 was given a supplement formulation having a different ratio of Quad BHB to MCT powder. By comparing the results of both of these Quad BHB formulation options, researchers were able to determine which Quad BHB supplement garnered the most benefit with regard to both weight loss and mental health. After receiving their jars of Quad BHB supplement, subjects were instructed to take one scoop twice daily, once in the morning and once in the evening. Subjects were also instructed to keep a weekly food diary listing their general eating habits.

## **Study Methods**

- Subjects obtained a blood draw for hs-CRP, Lipids, Particle size, Insulin, A1C, CMP and CBC at most a month prior to the start of the study.
- Weight and body composition were tracked with the following outputs: weight, body mass index (BMI), body fat percentage, body fat mass, fat free mass, visceral fat rating, body water percentage, body water mass, muscle mass, and bone mass. Throughout the course of this 2-month study subjects were weighed a total of three times: Once before the experiment began, once at the halfway mark of the study (1 month) and once at the conclusion of the study.
- An FDA approved WAVi P300 evoked response device was used in conjunction with both a Mini-Mental State Examination (MMSE) and a Hamilton Anxiety Rating Scale (HAM-A) in order to track cognitive scoring for each subject.
- Mental acuity was measured through use of a series of timed tests. The P300 test is used as a way to measure subconscious auditory reaction time. Subjects are asked to respond as quickly as possible to a high-pitched tone.
- Subjects were also asked to undergo two separate Trail Making Tests (A and B). These tests were employed because they are widely regarded as reliable methods for assessing both psychomotor and visual skills. The “flanker test” was also administered which is used to measure the efficiency with which the brain can suppress responses that are inappropriate in a particular context. The scores associated with these tests represent the amount of time required to complete each task. Generally, the faster the response, the more mentally acute the individual.
- The WAVi Desktop Report is also capable of recording the functional connectivity between the cortical regions in the brain, commonly known as coherence. Using values from all of these test criteria, researchers were able to reliably assess the mental health of each of their subjects, tracking any changes from start to finish.

## **Key Study Findings**

The study result data that came from this study pointed out two very significant areas of benefit from the Real Ketones Quad BHB-MCT formulations, especially the Group 255 Quad BHB-MCT formulation. Those areas of benefit were Stress Reduction and Improved Reaction Time.

### **Stress Reduction Results**

With regard to overall mental acuity benefits for both exogenous compounds tested:

At the start of this study subjects reported a HAM-A score of 8.31. By the end of this study subjects reported an average anxiety score of 5.67 points. The 2.64 point anxiety score reduction between

pre and post averages appears to have been stimulated by the ketone dietary supplement that subjects were ingesting.

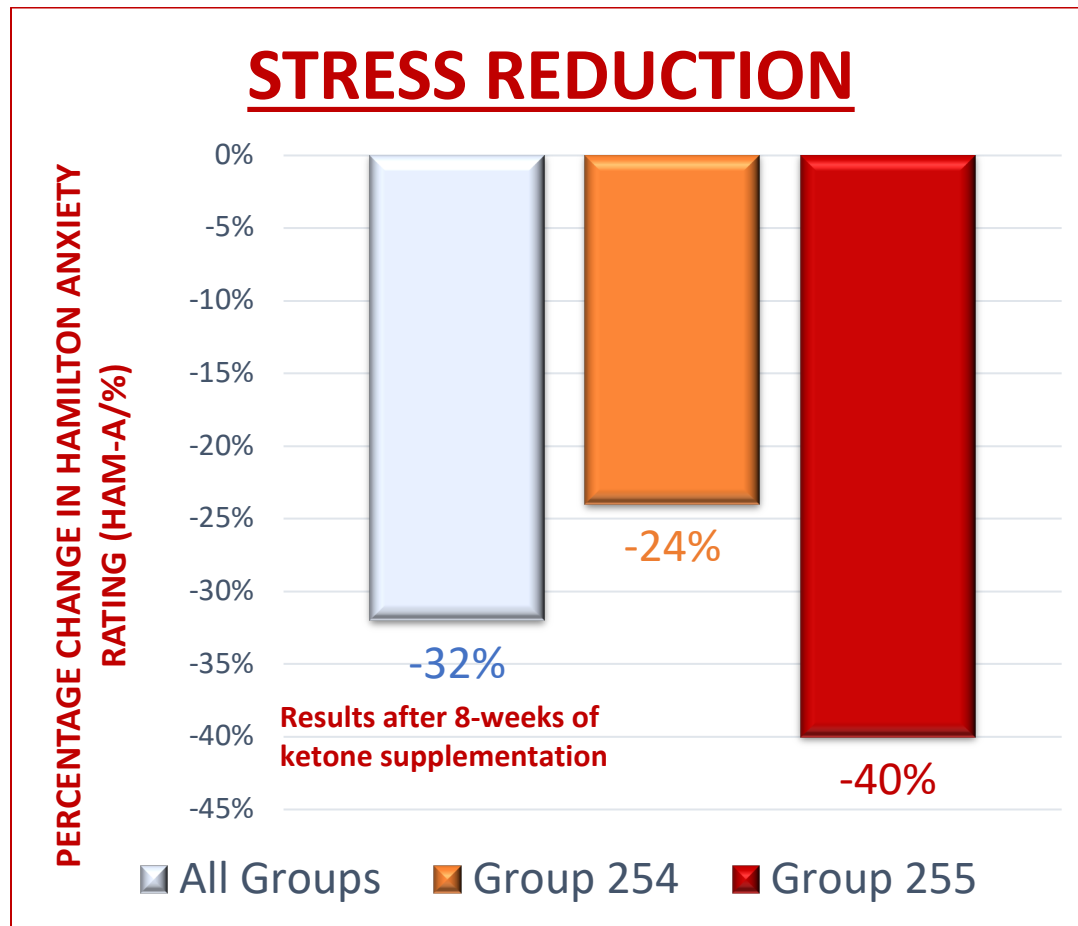
Based on the collected averages and corresponding p-values, the data suggests that the supplement marked “255” showed the greatest benefit with regard to both physical and mental health, compared to supplement “254”. With regard to the delta between each of the group’s mental benefits: Subjects in group “254” averaged a **1.81 point reduction** in their HAM-A anxiety scores compared to the “255” grouping who **averaged a 3.65 point reduction** in their HAM-A anxiety scores.

From an independent data analysis of the raw study data, the results show the following:

#### Hamilton Anxiety Scores

All	Before 8.31	After 5.67	Difference 2,64	32% decrease
254	Before 7.48	After 5.67	Difference 1.81	24% decrease
255	Before 9.14	After 5.49	Difference 3.65	40% decrease

#### Stress Reduction



### ***Normal Anxiety and Stress Reduction Claim***

Specifically the study data results showed that In this single blind comparison clinical study of 33 subjects with 18 subjects in Group 254 and 15 subjects in Group 255, using two different formulations of Real Ketones Quad BHB-MCT administered over an 8-week period, the Quad BHB-MCT formula used for Group 255 showed an average reduction in mild, non-chronic anxiety of 40% without the study subjects being in ketosis.

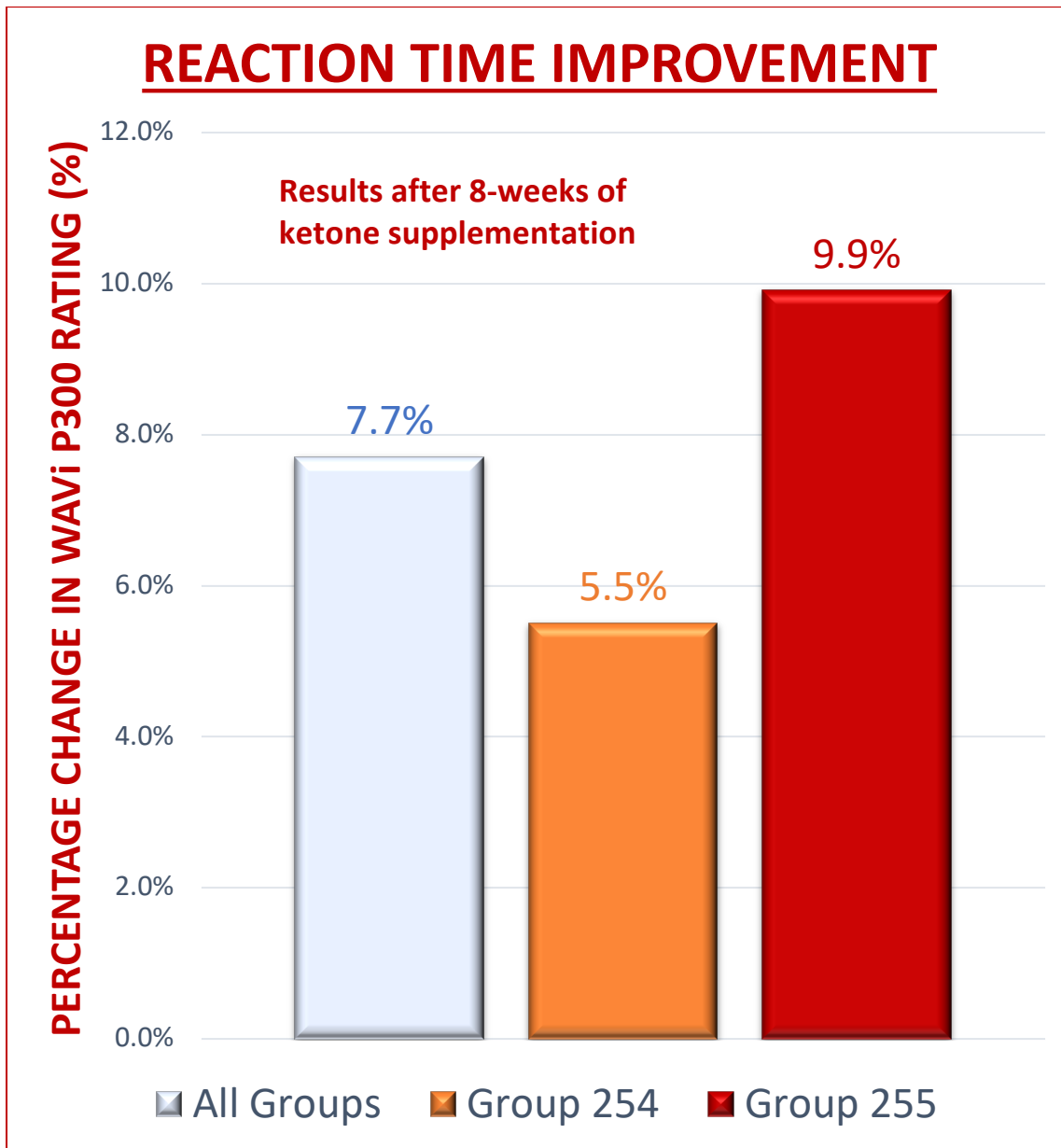
### **Reaction Time Results**

With regard to overall mental acuity benefits for both exogenous compounds tested:

Physical reaction time is another indicator of mental acuity. At study start, the subjects in both groups had an average physical reaction time of 385.93 milliseconds and averaged 356.12 milliseconds at the end. The 29.77 millisecond reduction in physical reaction time appears to have been stimulated by the supplements alone.

Subjects using the formula in Group “254” averaged a 20.86 millisecond improvement in their physical reaction time compared to the subjects using the formula in Group “255” who averaged a 39.10 millisecond improvement.

## Reaction Time Claims



### ***Reaction Time Claim***

Specifically the study data results showed that In this single blind comparison clinical study of 33 subjects with 18 subjects in Group 254 and 15 subjects in Group 255, using two different formulations of Real Ketones Quad BHB-MCT administered over an 8-week period, the Quad BHB-MCT formula used for Group 255 showed an average improvement in physical reaction time of 9.9% without the subjects being in ketosis.