

1. Clinical evidence shows a link between increased metabolism, reduced cravings, appetite suppression and weight loss.

Chromagic product assists to increase metabolism, and other products such as Essience Metabolic Plus and Energy Boost legally claim to reduce cravings and suppress appetite. Attached please find the following clinical evidence supporting the link between increased metabolism, reduced cravings, appetite suppression and weight loss.

- a. "Central neural and endocrine mechanisms of non-exercise activity thermogenesis and their potential impact on obesity" by CM Novak and JA Levine *Journal of Neuroendocrinology* 2007

Researchers find that fatty acid metabolism or triglyceride utilization indicates to the hypothalamic cells the macronutrient availability and subsequently alters appetite.

- b. "Thermogenic and metabolic antiobesity drugs: rationale and opportunities" by JC Clapham and JRS Arch *Diabetes, Obesity & Metabolism* 2007
central neural and endocrine mechanisms of non-exercise activity thermogenesis and their potential impact on obesity" by CM Novak and JA Levine *Journal of Neuroendocrinology* 2007

Researchers recommend that novel anti-obesity drugs should target peripheral metabolism rather than act centrally where they are more likely to cause side effects. Researchers state that weight loss via peripheral metabolism mechanisms may be slower but more sustained and indicate these approaches may include the activation of adrenergic, thyroid hormones, enzymes that promote fat oxidation.

- c. "Functional body composition: insights into the regulation of energy metabolism and some clinical applications" by MJ Muller et al. *European Journal of Clinical Nutrition* 2009

Both weight loss and weight gain are associated with metabolic adaptations resulting from changes in body composition and from alterations in individual body components

- d. "Mitochondrial thermogenesis and obesity" by S Gamberg and D Ricquier *Current Opinion in Clinical Nutrition and Metabolic Care* 2007

Body fat reflects equilibrium between energy intake and energy expenditure and any change in body weight and fat content in adults results from a change in either food intake or in energy expenditure (basal metabolism, physical exercise or adaptive thermogenesis) or both.

- e. "A water-soluble extract from *Cucurbita moschata* shows anti-obesity effects by controlling lipid metabolism in a high fat diet-induced obesity mouse model" by H Choi et al published in *Biochemical and Biophysical Research Communications* 2008

Oral administration of *Cucurbita* extract reduced the level of circulating lipids and the amount of adipose tissue resulting in decrease of body weight. It is thought to work by modulating the lipid metabolism through the decreased activity in lipogenesis as well as the increase in fatty acid oxidation.

- f. "Anti-obesity effect of dietary diacylglycerol in C57BL/6J mice: dietary diacylglycerol stimulates intestinal lipid metabolism" by T Murase et al published in *Journal of Lipid Research* 2002

Dietary DG found to reduce body weight gain that accompanies the stimulation of intestinal lipid metabolism as well as thermogenesis and thus reduced body fat accumulation.

- g. "Clinical evidence for effectiveness of Phencal in maintaining weight loss in an open-label, controlled, 2-year study" by K Blum in *Current Therapeutic Research* 1997

A clinical study over 2 year period illustrates that treatment group on the amino acid/vitamin regimen had a 70% decrease in food cravings for females and 63% decrease for males. It is thought that the mechanism may be related to glucose utilization and selective intake of carbohydrates.

- h. "Combining behavioral and pharmacological treatments for obesity" by S Phelan and TA Wadden in *Obesity Research* 2002

Pharmacological treatments resulting in reduced hunger, cravings or nutrient absorption may be combined with behavioral therapy to improve weight loss results. The combination may provide additive results with behavioral therapy helping with the external environment.

- i. "Inhibition of *Irvingia gabonensis* seed extract (OB131) on adipogenesis as mediated via down regulation of the PPARgamma and Leptin genes and up-regulation of the adiponectin gene" by JE Oben et al published in *Lipids in Health and Disease* 2008

IGOB131 may have a multifaceted approach to obesity management. Decreased adipocyte lipogenesis is one of the mechanisms. It may also demand excess leptin

synthesis which has been shown to gain access to the brain and reduce food intake and increase energy expenditure.