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A clinical and computational study on anti-obesity effects of hydroxycitric acid

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Erratum in

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Abstract

Hydroxycitric acid (HCA), a major active ingredient of *Garcinia cambogia* extracts, is known to suppress body weight gain and fat synthesis in animals and humans. But the underlying mechanism of HCA action is not fully understood. Clinical study on 100 obese individuals for a period of 3 months was performed followed by a computational study aimed to investigate the effects of HCA treatment on human subjects at anthropometric and plasma lipid profile levels. A detailed hepatic metabolic model was used to incorporate the effect of HCA at the metabolic pathway level. Perturbation analysis of ATP citrate lyase activity in the metabolic pathway was performed to simulate the net effect of HCA. Significant reductions in body weight, triceps, subscapular, and mid axillary measurements as well as in serum triglyceride, cholesterol, HDL and LDL levels were observed following HCA dosage. During the study, half of the subjects experienced a decline in body weight and the remainder experienced an increase in body weight. However, analysis of fat mass with the help of empirical correlations clearly showed significant reduction in the mean values due to HCA dosage in both cases. An extra increase in fat free mass was responsible for offsetting the decrease in fat mass for the subjects who experienced an increase in body weight during the trials. Perturbation analysis showed a net reduction in fatty acid, triglyceride and cholesterol synthesis along with urea cycle fluxes under lipogenetic conditions. Moreover, protein synthesis fluxes increased under these conditions. These results indicate that HCA treatment can reduce body weight gain and fat accumulation in obese subjects along with improving their anthropometric parameters and metabolic state.

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 Fig. 2

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 Fig. 3

Fig. 3. Box plots representing changes in...

 Fig. 4

Fig. 4. Probability distribution curves depicting decrease...

 Fig. 5

Fig. 5. Probability distribution curves depicting decrease...

 Fig. 6

Fig. 6. Dynamic response (for 24 h)...

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