**Anti-obesity molecules of natural origin**

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Obesity has outreached the dimensions of a health problem for the countries with westernized lifestyle and has established as a global epidemic over the past 4 decades[1,2]. Excessive body weight is among the top five risk factors in terms of attributable deaths and metabolic complications development[2,3]. Furthermore, health-care burden associated with obesity- related diseases is expected to rise by 2030[3]. Consequently, the prevention and treatment of obesity are subjects undergoing intense research[4]. In this respect, compounds of natural origin attract profound interest as candidates for anti-obesity therapy. Rosmarinic acid (RA) is a natural compound known for its anti-inflammatory effects, however, insufficiently examined in context of obesity. We have investigated the anti-adipogenic action of RA in human adipocytes. The most prominent effect was found on the key adipogenic factors CCAAT-enhancer-binding protein alpha (C/EBPα), peroxisome proliferator-activated receptor gamma (PPARγ) and adiponectin, as well as on the modulation of transforming growth factor beta and interleukin 17A. Results indicate that RA prevents inflammation and excessive lipid accumulation in human adipocytes and has potential for treatment of obesity and obesity-related inflammation[5]. Combinatorial treatment is receiving close view as an attractive approach against obesity. We have evaluated the anti-obesity potential of caffeic acid (CA) and chlorogenic acid (CGA) as co-treatment in human adipocytes. The combination of CA/CGA elevated browning gene expression levels. Mechanistically, AMP-activated protein kinase (AMPK) and PPAR-related pathways were identified as the major involved. The observed browning-inducing potential in adipocytes upon CA/CGA co-stimulation merits implementation in obesity management[6].

**Acknowledgments:**

This research received funding from the European Union’s Horizon 2020 research and innovation proigramme, project PlantaSYST (SGA No 739582 under FPA No. 664620), and the BG05M2OP001-1.003-001-C01 project, financed by the European Regional Development Fund through the “Science and Education for Smart Growth” Operational Programme.

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