



Lipolytic effect of a polyphenolic citrus dry extract of red orange, grapefruit, orange (SINETROL) in human body fat adipocytes. Mechanism of action by inhibition of cAMP-phosphodiesterase (PDE)

Constantin Dallas^{a,*}, Alain Gerbi^b, Guillaume Tenca^c, Franck Juchaux^c, François-Xavier Bernard^c

^aFYTEXIA-NB Consulting Group, ZAC de Mercorent, 280 rue Nicolas Joseph Cugnot, 34500 Beziers, France

^bRDVC Produit santé, 85 rue de la cavée verte, 76620 Le Havre, France

^cBIOalternatives S.A.S, 1 bis, rue des Plantes, 86160 Gençay, France

Abstract

The present study investigated the lipolytic (break of fat stored) effect of a citrus-based polyphenolic dietary supplement (SINETROL) at human adipocytes (*ex vivo*), body fat (clinical) and biochemical levels (inhibition of phosphodiesterase). Free fatty acids (FFA) release was used as indicator of human adipocyte lipolysis and SINETROL activity has been compared with known lipolytic products (isoproterenol, theophylline and caffeine). SINETROL stimulated significantly the lipolytic activity in a range of 6 fold greater than the control. Moreover, SINETROL has 2.1 greater activity than guarana 12% caffeine while its content in caffeine is 3 times lower.

Clinically, two groups of 10 volunteers with BMI relevant of overweight were compared during 4 and 12 weeks with 1.4 g/day SINETROL and placebo supplementation. In the SINETROL Group the body fat (%) decreased with a significant difference of 5.53% and 15.6% after 4 and 12 weeks, respectively, while the body weight (kg) decreased with a significant difference of 2.2 and 5.2 kg after 4 and 12 weeks, respectively.

These observed effects are linked to SINETROL polyphenolic composition and its resulting synergistic activity. SINETROL is a potent inhibitor of cAMP-phosphodiesterase (PDE) (97%) compared to other purified compounds (cyanidin-3 glycoside, narangin, caffeine). These results suggest that SINETROL has a strong lipolytic effect mediated by cAMP-PDE inhibition. SINETROL may serve to prevent obesity by decreasing BMI.

© 2008 Published by Elsevier GmbH.

Keywords: Lipolysis; Citrus; Adipocytes; Phosphodiesterase; Body fat; FFA