Acute effect of natural triterpenes on glucose homeostasis

Castro, A.J.G. 1; Frederico, M. J. S. 1; Mendes, C. P. 1; Pizzolatti, M. G. 2; Kanumfre, F. 2; Silva, F. R. M. B. 1; Souza, A. Z. P. 1

1Departamento de Bioquímica, UFSC, Santa Catarina, Brazil.
2Departamento de Química, UFSC, Santa Catarina, Brazil

The aim of the present work was to study the acute effect of some natural compounds isolated from Croton heterodoxus. Rats (protocol CEUA PP00414) were pretreated with amyrin, HCH18, HCH 25, HCH 70 or HCH 115 (0.1, 1 and 10 mg/kg) and after 30 min were overloaded with glucose (4 g/kg; p.o gavage). Serum glucose levels were measured at zero and 15, 30, 60 and 180 min after glucose administration. Liver and skeletal muscle was removed at the end of treatment (3 h) to glycogen content evaluation. The specific activities of glycosidase (maltase, lactase and sucrase) were determined in vitro with/without each triterpenes (0.001, 0.01, 0.1 and 1 mg/ml) with respective substrates. Amyrin, HCH 25 and HCH 70 (1mg/kg) at 15 min significantly reduced serum glucose levels compared with control group (183.4±9.3 mg/dl): 134.7±6.1, 120.0±1.3 and 135.0±11.4 mg/dl, respectively. At same time, HCH 18 and HCH 115 (10 mg/kg) reduced the glycemia: 140.5±1.8 and 127.7±11.5 mg/dl, respectively. Compared to control (3.2±0.3 mg/ g of tissue), amyrin (1 mg/kg) and HCH 25 (0.1 mg/kg) increased hepatic glycogen (10.3±0.7 and 16.1±0.9 mg/ g of tissue, respectively). HCH 115 and HCH 18 in 0.001 mg increased maltase activity in 50% and 42%, respectively. Taking it in account, these results point a potential role of triterpenes to ameliorate diabetes status by acting on several targets. Studies are underway in order to understand the molecular mechanism of action of these compounds on glucose homeostasis.

Word Keys: Triterpenes, hyperglycemia, glycogen content, Glycosidase.

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