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Investigation of molecular mechanism of glucose-lowering activity of Aquilaria crassna L. leave extract in HepG2 cells

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ype 2 diabetes mellitus is a chronic metabolic syndrome characterized by hyperglycemia which can further develop microvascular and macrovascular complications. Aquilaria crassna L. was reported as a traditional Thai medicinal plant that possesses an anti-diabetic effect in animal model. The present study revealed the mechanism by which this plant extract lowered glucose levels in cultured hepatocellular cell line, HepG2. ALE at a concentration of 6.25, 12.5 and 25 μ g/ mL significantly increased glucose consumption in a dosedependent manner. The increase of glucose consumption of ALE-treated HepG2 cells was accompanied by 2-fold increase of the glycogen synthase 2 (GYS-2) mRNA expression and 50% suppressing of glucose-6-phosphatase expression. These data indicate that the anti-diabetic effect of ALE on HepG2 cells is mediated through the increased of glycogen synthesis and the decrease of gluconeogenesis. Gas-chromatography and mass spectrometry (GC-MS) analysis of the ethanolic extract of ALE consisted of nitrogen containing compounds (39%), terpenoids (31%), polyketide (18%), and phenylpropanoids (12%). Investigation of glucose-lowering effect of these

compounds is currently underway.



Mechanism of glucose-lowering effect of A. crassna leaves extract (ALE) in HepG2 cells, $(\uparrow;$ Increase, \exists ; Decrease

Speaker Biography

Phanupol Mongkolsiri is a graduate student in the Biochemistry Program at Mahidol University where he investigates biolochemical activities of natural products which may be used as anti-diabetic drugs. He completed his B.Sc. in Chemistry from Mahasarakham University.

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