

Antidiabetic activity and mechanism of action of Phaseolus vulgaris Linn (bean) extract

Diabetes management using medicinal plants is still widely practiced in many developing countries. Interestingly, phytochemicals contained in the bean plant have been proven to possess antidiabetic activities, such as lowering blood glucose levels, stimulating insulin secretion, and reducing diabetes complications. This study aims to investigate the antidiabetic activity and mechanism of action of Phaseolus vulgaris (bean) extract. Blood glucose levels were measured using enzymatic methods at hours 0, 1, 2, 3, 4, and 5 after treatment with P. vulgaris extract at a dose of 300 mg/kg body weight. The mechanism of action of P. vulgaris extract was also analyzed based on the ¹⁴C-D-glucose uptake response of the soleus muscle at hours 0, 1, 3, and 5 after treatment. P. vulgaris extract showed the most significant blood glucose-lowering effect in diabetic rats at the 5th hour after treatment. This antidiabetic activity was compared to metformin, an oral drug for diabetes and transient hyperglycemia. Maximum glucose uptake occurred at the 5th hour after administration of P. vulgaris extract. Based on these findings, P. vulgaris has demonstrated blood glucose-lowering activity in diabetic conditions and is safe without causing severe hypoglycemia in normal rats. The mechanism of action of P. vulgaris occurs through increased muscle glucose uptake.

Keywords: Phaseolus vulgaris, antidiabetic, glucose uptake, bean.

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