

Effects Of *Salacia Reticulata* Root Bark On Blood Glucose Levels Of Normal And Alloxan-Monohydrate Induced Diabetic Mice

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Abstract:

In the present study, a comparative antidiabetic potential of *S. reticulata* root bark ethyl acetate and aqueous extracts were studied in vitro. Acute toxicity study of both extracts was carried out in male BALB/c mice, showed no toxicity. Further, in in-vivo studies showed antidiabetic activity in mice with induced type II diabetes mellitus. Type II diabetes mellitus was induced in the experimental rats by intraperitoneal injection of 10% alloxan monohydrate (2,4,5,6 tetraoxypyrimidine; 5-6-dioxyuracil). The mice were orally fed different doses ranging from 50 to 200 mg/kg body weight of *S. reticulata* root bark extracts for 8 hrs. Blood glucose level, body weight and hematological parameters were analyzed on day 0, 7, 14 and 28 days. Among these extracts, ethyl acetate extract showed decreased the glucose levels in a dose-dependent manner as well as the hematological parameter levels in diabetic mice as compared with aqueous extracts. The HPLC chromatogram showed the abundant presence of phenolic acids and terpenoids.

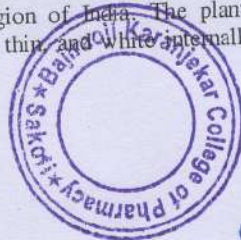
Keywords: Alloxan diabetic rats, Hypoglycemic activity, *Salacia reticulata* Weight, Hematological parameter, Blood glucose

INTRODUCTION:

Diabetes mellitus is a principal cause of morbidity and mortality in human. It is a syndrome characterized by hyperglycemia, polydipsia and polyuria and causes complications to the eyes, kidneys, and nerves. It is also associated with an increased incidence of cardiovascular disease. The clinical manifestations and development of diabetes often differ significantly between countries and also between racial groups within a country. This increase can be attributed to many factors, including a stressful lifestyle as well as improper dietary habits. This is of economic concern as the disease requires life-long treatment and is also associated with high morbidity from the resulting complications¹. According to the IDF statistics, presently every seven seconds someone is estimated to die from diabetes or its complications, with 50% of those deaths (4 million in total per year) occurring under the age of 60 years². This is against the background of a global diabetes prevalence of 8.8% of the world population in 2017, standardized for the age group 20-79 years³.

The prevalence is expected to further increase to 9.9% by the year 2045. In total numbers, this reflects a population of 424.9million people with diabetes worldwide in 2017 with an estimate of a 48% increase to 628.6million people for the year 2045. Global numbers of diabetes prevalence have continuously risen from 151 million in 2000, when the IDF Diabetes Atlas first was launched, to 285million in 2009 and to 382million in 2013. Disturbingly in this context, some 50% of all individuals with diabetes are undiagnosed, especially in developing countries⁴. Moreover, it was estimated that the number of adults with diabetes in the world had increased from 108 million in 1980 to 422million in 2014 (28.5% due to the rise in prevalence, 39.7% due to population growth and ageing, and 31.8% due to interaction of these two factors). Besides the growth and aging of the world population in general, the global obesity epidemic has turned out to be a key factor for the rise of diabetes incidence together with the immense progress of multifactorial cardiovascular risk management and successful revascularisation therapy of people with diabetes also contributing to the expansion of the worldwide diabetes population⁵.

Salacia reticulata (Celastraceae) is a large woody climbing, perennial, woody shrub naturally found in Sri Lanka and Southern region of India. The plant has dichotomous branching pattern. Bark is smooth, greenish grey in colour, thin, and white internally. Leaves are opposite and elliptic-oblong. Leaf-base is




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