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Hypoglycaemic effect of *Berberis vulgaris* L. in normal and streptozotocin−induced diabetic rats

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ABSTRACT

Objective: To achieve a primary pharmacological screening contained in the aqueous extract of *Berberis vulgaris* (*B. vulgaris*) and to examine the hypoglycaemic effect and biochemical parameters of aqueous and saponins extract on groups of rats rendered diabetic by injection of streptozotocin. **Methods:** The phytochemical tests to detect the presence of different compounds were based on the visual observation of color change or formation of precipitate after the addition of specific reagents. Diabetes was induced in rats by intraperitoneal (*i.p.*) injection of streptozotocin (STZ) at a dose of 65 mg/kg bw. The fasting blood glucose levels were estimated by glucose oxidase−peroxidase reactive strips (Dextrostix, Bayer Diagnostics). Blood samples were taken by cutting the tip of the tail. Serum cholesterol and serum triglycerides were estimated by enzymatic DHBS colorimetric method. **Results:** Administration of 62.5 and 25.0 mg/kg of saponins and aqueous extract respectively in normal rats group shows a significant hypoglycemic activity (32.33% and 40.17% respectively) during the first week. However, diabetic group treated with saponin extract produced a maximum fall of 73.1% and 76.03% at day 1 and day 21 compared to the diabetics control. Also, blood glucose levels of the diabetic rats treated with aqueous extract showed decrease of 78.79% on the first day and the effect remains roughly constant during 3 week. Both extracts also declined significantly biochemical parameters (20.77%−49.00%). The control in the loss of body weight was observed in treated diabetic rats as compared to diabetic controls. **Conclusions:** These results demonstrated significant antidiabetic effects and showed that serum cholesterol and serum triglycerides levels were decreased, significantly, consequently this plant might be of value in diabetes treatment.

1. Introduction

Berberis vulgaris (*B. vulgaris*) Linn which is commonly known as Barberry belongs to the family Berberidaceae. *Berberis* is the genus of spiny deciduous evergreen shrubs, with yellow wood and yellow flowers, and comprises 190 species. In traditional medicine the extracts of various Berberidaceae (*Berberis aquifolium*, *Berberis vulgaris* and *Berberis aristata*) are used for rheumatic and other types of chronic inflammations[1]. Some authors demonstrated that these extracts have a significant activity against bacteria, viruses, fungi, protozoa, helminthes and chlamydia[2]. Studies carried out on the properties and chemical composition of the extracts show that their principal activity is due to their alkaloid constituents with an isoquinolinic

nucleus such as berberine, oxyacanthine, berbamine and palmatine[2]. It has been shown that berberine has febrifugal, hypotensive, immuno−stimulating, anti−inflammatory, antiarrhythmic antimicrobial properties, and it prolonged the action potential duration in Purkinje fibres. There are on−going studies regarding a possible anti−tumour activity of berberine[1−5].

Diabetes mellitus is a major illness of the human race implicated with numerous clinical manifestations. It is a clinical syndrome characterized by hyperglycemia due to absolute or relative deficiency of insulin. According to World Health Organization projections, the diabetes population is likely to increase to 300 million or more by the year of 2025[6,7]. Currently available therapies for diabetes include insulin and various oral antidiabetic agents such as sulfonylureas, biguanides, α−glucosidase inhibitors and glinides, which are used as monotherapy or in combination to achieve better glycemic regulation[8]. Many of these oral antidiabetic agents have a number of

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