

ANTI-HYPERGLYCEMIC EFFECTS OF VOLATILE OILS EXTRACTED FROM *ROSEMARINUS OFFICINALIS* AND *ARTEMISIA CINAE* IN DIABETIC RATS

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Rosemary (Rosmarinus officinalis L.) is a common household plant grown in many parts of the world. It is used for flavoring foods, beverages and cosmetics (Gilani et al., 2005, Lohiya et al., 2005, Fitter et al., 2005). In folk medicine, it is used as an antispasmodic in renal colic and dysmenorrhea, in relieving respiratory disorders and to stimulate growth of hair (Karim and Quraan ,1986). The most important constituents of rosemary are caffeic acid and its derivatives such as rosmarinic acid (Herrero et al., 2005). These compounds have been reported to possess various medicinal properties viz antioxidant, choleric, hepatoprotective, and antitumorogenic activities (Oluwatuyi et al., 2004, Ramirez et al., 2004). Extract of rosemary also relaxes smooth muscles of the trachea and intestine (Oluwatuyi et al., 2004). Artemisia species has been widely used in Iraqi folk medicine for the treatment of diabetes mellitus (Twaij and AlBadr; 1988, Korkmaz and Gurdal, 2002). However, very few scientific studies were carried out to assess the efficacy and toxicity of these plants. The present study was undertaken to evaluate the antihyperglycemic effects of volatile constituents extracted from the leaves of these evergreen shrubs in alloxan induced diabetic rats.

Volatile oils were extracted by hydrodistillation method (Balbau *et al.*, 1981) from the leaves of *Rosmarinus officinalis* and *Artemisia cinae* , collected from different Mediterranean regions.

Diabetes was induced in rats by a single injection of alloxan monohydrate @ 150 mg/kg, i.p. Animals found hyperglycemic after 48 hours were chosen for the further study.

Twentyfour male Wistar rats weighing 150-200 g were chosen and housed in polypropylene cages. They were maintained as per recommended standards. Food and water were given adlibitum. They were divided into 4 groups each comprising of 6 rats. Normal rats which received neither drug nor

extract, were used as non diabetic control (Group-1) while alloxan induced diabetic rats were used for the remaining 3 groups. Group II served as diabetic control which received no extract. Group III received extract of *Rosmarinus spp* @ 0.1 ml /kg body weight for 21 days while Group IV received extract of *Artemisia spp.*@ 0.1 ml /kg body weight. Both the extracts were diluted in olive oil and administered orally once daily using specially designed intubation needle.

Alloxan (Loba chernie, Bombay) and glucose estimation kits (Span diagnostics Ltd., Surat, India) were employed.

Blood samples were collected by intra orbital sinus method using sodium fluoride as

anticoagulant at 0,7,14 and 21 days for glucose estimation. Blood glucose was determined by GOD-POD method (Trinder, 1969)

Blood glucose levels recorded in all the four groups at 0, 7, 14 and 21 days are shown in Table-I. Diabetic control rats (Group-II) recorded elevated values when compared to the normal untreated rats (Group-1). Diabetic rats treated with volatile oil of *Rosmarinus* (Group-III) showed a progressive decrease in values towards normal while diabetic rats treated with extract of *Artemisia* (Group-IV) failed to produce normoglycemic effect at 21 days though it exhibited antihyperglycemic property.

Antihyperglycemic effect of *Artemisia* species has been reported in experimentally induced

diabetic animals viz rats, rabbits, mice (Mariff *et al.*, 1995, Twaij and AlBadr, 1988, Korkmaz and Gurdal, 2002, Al Khazraji *et al.*, 1993)

Our findings suggest that extract of *Artemisia* species should be administered for a long period to produce normoglycemia while extract of *Rosmarinus* species could produce reduction in blood glucose levels towards normal at 21 days.

Table 1

Blood Glucose levels* (mg%) recorded in normal as well as treated rats

Group	Oday	7 days	14days	21days
Group-I	96.24± 3.8	94.34± 3.8	98.26± 4.8	96.48± 2.6
Group-II	508.40±4.1	528.40±4.7	580.40±4.1	598.40 ± 3.2
Group-III	523.204 ±3.2	324.63± 4.2	152.00±4.8	96.22± 4.6
Group-IV	520.00±4.4	328.00± 4.2	252.00.± 4.2	156.72±5.2

(values with different superscripts differ significantly (P<0.05))

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