

Hypoglycemic effect of *Salpianthus arenarius* root

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INTRODUCTION

Salpianthus arenarius Humb & Bonpl. known as "catarinita" or "apasicua" has stem straight, the branches alternate but not dichotomous; inflorescence much narrower; flowers in very short, few flowered racemes; leaves petiolated.¹ It grows in the states of Jalisco, Michoacán, Guerrero and Oaxaca. *Salpianthus arenarius* has been used by several communities in México for the treatment of nervous disturbances,² and as remedy for scorpion bites and the treatment of diabetes.³ It has been isolated from this plant a cyclitol with parasymphathomimetic effect.⁴ However there are no formal studies on the hypoglycemic activity in the specialized literature. For this reason it was decided to study this effect on mice with alloxan induced diabetes.

MATERIALS AND METHODS

Biological material. The plant was collected in Zirándaro, Guerrero state, in February 1992, dried in the shade and cut in small fragments. The species was authenticated by Aurora Chimal; a voucher specimen was deposited in the herbarium of the Universidad Autónoma Metropolitana-Xochimilco.

Aqueous extract. In a 500 ml round flask fitted with a reflux condenser, 100 g of the dried root and 300 ml of water were heated and refluxed for 2 h, cooled to room temperature and decanted. After that the water was removed from the extract by evaporation under vacuum in a rotavapor.

Hexane, chloroform and methanol extracts. The same procedure was followed as for the aqueous extract.

Hypoglycemic activity. A sufficient number of CD-1 strain male mice (25-30 g), were injected with 0.2 ml of an aqueous alloxan solution (70 mg/kg of animal weight) in the tail, every third day, 3 times. They were then rested during a week(5), and their glucose level determined using the o-toluidine micromethod. The diabetes induced mice were separated in lots of 8 animals each, and injected intraperitoneally with an aqueous suspension of the extract. The control group was injected with an equal volume of water only.

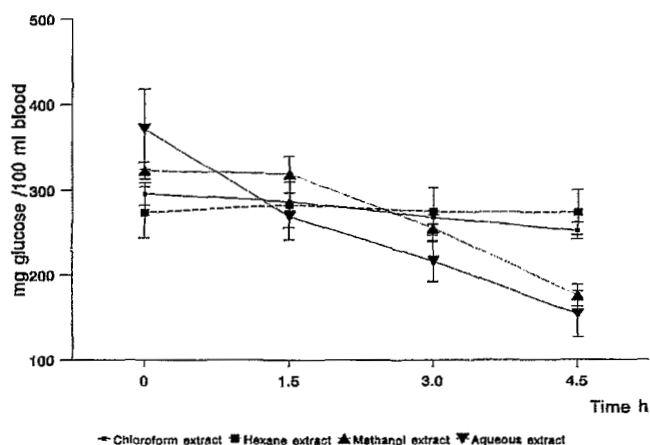
The o-toluidine micromethod, used for the determination of glucose level in blood, is a modified method of that reported by the Instituto Mexicano del Seguro Social.⁶ A sample of blood from the mice's tail was taken with heparinized capillary tube. It was sealed and centrifuged for 10 min at 400 rpm, and then cut in the section separating plasma and erythrocytes. Two units of plasma were placed in a 10 ml test tube using a blood diluting pipette and 1 ml of o-toluidine solution⁶ was added. The mixture was heated to boiling for 15 min., and its interpolated absorbance value determined at 630 nm in a spectrophotometer.

RESULTS

In Figure 1, is shown the results obtained with chloroform, hexane, methanol and aqueous extracts.

Fig. 1.

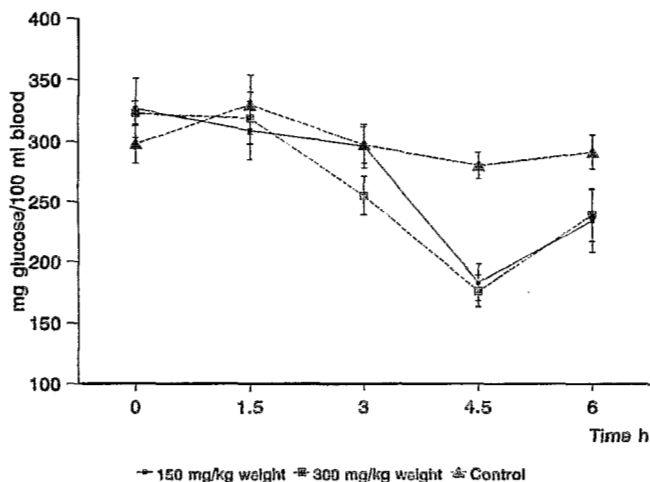
Effects of *Salpianthus arenarius* (300 mg/kg weight injected intraperitoneally) on glucose level in blood in groups of 8 CD1 strain male mice



The results obtained with two different doses of methanol extract are shown in Figure 2.

Fig. 2

Effects of Methanol extract of *Salpianthus arenarius* (injected intraperitoneally) on glucose level in blood in groups of 8 CD1 strain male mice



DISCUSSION

In Figure 1, is shown that the hexane and chloroform extracts do not have pharmacological activity on mice with alloxan induced diabetes, but the aqueous and methanol extracts appreciably reduced the glucose level in blood.

The results obtained with methanol extract indicate that this extract is capable of reducing appreciably the glucose level in blood, in the pharmacological model used, and that after 6 h of administration for each dose, the glucose concentration increase. None of the mice used presented intoxication symptoms, even at the highest dose (300 mg/kg), indicating that the toxicity of the methanol extract is low.

Similar results were obtained with semi-purified samples, these were procured from chromatographic separation of the methanol extract in a column packed with silica gel 60, eluted with chloroform and increasing its polarity with methanol.

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