

THE PHYTOCHEMICAL COMPOSITION AND THE EFFECT OF METHANOLIC EXTRACT OF *TYPHA DOMINGENSIS PERS.* FRUITE ON SOME BIOCHEMICAL PARAMETERS IN ADULT MALE RABBITS

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ABSTRACT

This study was undertaken to find the phytochemical composition of *Typha domingensis pers.* Fruite and the effect of the methanolic extract on some biochemical parameters such as serum glucose , cholesterol , total protein , AST, ALT, and ALP enzymes in adult male rabbits after oral administration of different doses (500,1000,1500 mg/ Kg) daily for 30 days . Rabbits were divided into four groups 6 rabbits in each , group I animals received only 3 ml normal saline orally as control ,while groups(II ,III and IV) were orally administrated (500,1000,1500 mg/kg) of methanolic extract respectively .The result of the present study indicated that *Typha domingensis pers.* Fruite contains alkaloids, phenols, flavonoids, tannins and saponins,. Significantly decreased ($p < 0.05$) was observed in serum level of glucose, AST, ALT and ALP while, no significant different ($p > 0.05$) in serum level of cholesterol and total proteins were observed as compared with control group. This study concluded that methanolic extract of *Typha domingensis pers.* Fruite can act as anti-diabetic and hepatoprotective agent .

INTRODUCTION

The *Typha domingensis pers.* (T.domingensis) is a member of the typhaceae family , these plants are herbaceous, rhizomatous perennial plants with long , slender green stalks topped with brown , fluffy , sausage-shaped flowering heads , 15-40 dm tall.

The spike is bright yellow-to-orange-brown. The basal leaves are 6-18 mm wide when fresh , 5-15 mm wide when dry. Typhaceae family is common in the warm temperature and tropical regions of the world [1] always found in or near water , in marshes , ponds , lakes and depressions .

Typha domingensis used externally for burns and wound healing [2] , leaves are diuretic [3] . The pollen is astringent , desiccant , diuretic , haemostatic and vulnerary [3].

The aim of the present study is to find the phytochemical composition of the fruite of *typha domingensis pers.* and its effects on some biochemical parameters in normal rabbits

MATERIALS AND METHODS

Plant Material:

The flour of *Typha domingensis pers.* fruit was purchased from a local market in Basra city.

Preparation of Extract :

A quantity 20 gm of flour was extracted with n-hexan using soxhlet extraction method to remove the oil .The defatted flour was dried. The methanolic extract was obtained by reflux, the dry defatted flour treated with methanol (80%) for twelve hours . The suspension was filtered through Whatman filter paper No.31 under vacuum .The extract was concentrated by using rotary evaporator .The weight of the dry extract (3 gm) was kept in a capped container in a refrigerator. Different concentrations (500,1000,1500 mg/Kg) of the extract were prepared .

Experimental Animals

Adult male domestic rabbits weighing (1000-1500) gm were used and housed in individual cages and fed with alfalfa and tap water. The animals were divided into four groups, six each .The control animals (group I) were administered 3 ml of normal saline (0.9 % NaCl) while groups II, III and IV were administered (500,1000,1500 mg/Kg of body weight) of the extract respectively for 30 days. At the end of experiment , blood samples were taken from the heart of overnight fasted animals into plastic syringes, and allowed to clot, then centrifuged for 10 minutes and serum samples were stored in polyethylene eppendorff tubes at -20° C until analysis.

Phytochemical Analysis

Chemical tests were carried out on the methanolic extract by using standard procedures to identify the constituents, by characteristic colour changes as described by [4]

Estimation of Biochemical Parameters

Serum glucose was determined by the method of [5] and [6] , serum cholesterol was determined by the method of [7] , serum total protein was determined by the method of [8] and [9] , serum aspartate aminotransferase (AST) and alanine aminotransferase (ALT) were determined by the method [10] and serum alkaline phosphatase (ALP) was determined by the method of [11].

Statistical Analysis

The results of the present study were analyzed by univariate analysis of variance .The data were expressed as mean \pm standard deviation (mean \pm SD) . Least significant different test (LSD) was used to test the difference between means (groups) by using statistical program for social science SPSS. $p < 0.05$ was considered significant.

RESULTS AND DISCUSSION

Phytochemical screening revealed the presence of alkaloids , phenols , flavonoids , tannins and saponins as shown in table (1)

Table 1 : The phytochemical composition of *Typha domingensis pers. fruite*

phytochemicals	T.domingensis
Alkaloids	+
Phenoles	+
Flavonoids	+
Tannins	+
Saponins	+
Amino acids	-

Alkaloids , saponins and tannins are known to have antimicrobial activity [12] and [13]saponins useful in reducing inflammation of upper respiratory passage and also chiefly as foaming and emulsifying agents and detergents [14], tannins have astringent properties that hasten the healing of wounds and prevention of decay [15] . Alkaloids and their synthetic derivatives are used as basic medicinal agents for their antispasmodic and bactericidal effects [16] and [17] , flavonoids as an anti-oxidant [18] .

The results of the effect of administration the various concentration (500, 1000 , 1500 mg / kg) of methanolic extract on serum glucose , cholesterol, total protein , AST , ALT and ALP are presented in table 2 .

Table 2 : Effect of methanolic extract of *Typha domingensis pers. fruite* on some biochemical parameters in adult male rabbits.

parameters	Groups				
	N	Group I N.S	Group II 500 mg/Kg	Group III 1000mg/Kg	Group IV 1500 mg/Kg
serum glucose (mg/ 100 ml)	6	88.25±7.11	85.00±4.11*	82.15±3.10*	80.00±4.51*
cholesterol mg/100 ml	6	80.51±5.11	80.11±4.00	79.50±4.11	80.12±5.51
Total Protein g/100 ml	6	6.29±0.28	7.30±0.36	6.15±0.61	5.19±0.33
A ST (IU/L)	6	14.20±2.21	11.51±1.41*	10.73±1.10*	9.52±1.22*
ALT (IU/L)	6	15.11±1.10	12.21±2.11*	12.00±1.20*	10.51±1.01*
ALP (IU/L)	6	28.22±2.14	25.23±1.50*	24.51±1.21*	20.71±1.20*

N =number of animals , Means±SD , N.S = normal saline , * p< 0.05

The results showed that there was no significant effect ($p > 0.05$) in serum level of total protein and cholesterol as compared with control group but there was significant decrease ($p < 0.05$) in serum level of glucose , AST , ALT and ALP as compared with control group this effect may be due to the presence of alkaloids and flavonoids , alkaloids which known

have anti-dabetic activity as refer by [19] alkaloids can reduce serum level of glucose in diabetic rats. The lowering the levels of AST , ALT and ALP may be due to flavonoids by its effect as anti-oxidant as refer by [20] in *Phyllanthus amarus* plant. In 2008 [21] observed that green tea has a protective effect against liver injury by polyphenples . By lowering the levels of serum glucose , AST, ALT and ALP it indicates that *Typha domingensis pers.* has anti-diabetic and hepatoprotective effects.

التركيب الكيميائي النباتي و تأثير المستخلص الميثانولي لثمار البردي على بعض المعايير الكيموحيوية في ذكور الارانب البالغة

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الخلاصة

أجريت هذه الدراسة لمعرفة التركيب الكيميائي النباتي لثمار البردي و تأثير المستخلص الميثانولي على بعض المعايير الكيموحيوية في مصل الدم مثل الكلوكوز ، الكوليستيرول ، البروتينات الكلية ، و انزيمات اسبارتيت ترانس أمينيز ، الانين ترانس أمينيز و الفوسفاتيز القاعدي في ذكور الارانب البالغة بعد الاعطاء الفموي لجرع مختلفة (1000,500، 1500 ملغم/كغم) لمدة 30 يوم . تم تقسيم الارانب الى أربع مجموعات (6 لكل مجموعة) الاولى مجموعة السيطرة جرعت 3 مل من المحلول الملحي الفسيولوجي ، بينما المجموعات الثانية ، الثالثة و الرابعة 1500 ملغم / كغم) من المستخلص الميثانولي على التوالي . أوضحت نتائج الدراسة جرعت ب (500، 1000 أحتواء ثمار نبات البردي على القلويدات ، الفلافونيدات ، الفينولات ، تانينات و صابونين . لوحظ حصول انخفاض معنوي ($P < 0.05$) في مستوى الكلوكوز و أنزيمات اسبارتيت ترانس أمينيز ، ترانس أمينيز الانين و الفوسفاتيز القاعدي في مصل الدم و عدم حدوث فرق معنوي ($P > 0.05$) في مستوى الكوليستيرول ، البروتينات الكلية في مصل الدم مقارنة بمجموعة السيطرة . وتدل نتائج الدراسة ان المستخلص الميثانولي لثمار نبات البردي يمكن ان يعمل كمضاد للسكر و له القدرة على حماية الكبد .

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