

Short Communication

Phytochemical Investigations of Crown of *Solanum melongena* fruit

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Abstract

The crown of *Solanum melongena* was removed from fruit, dried, extracted and percentage yield was calculated. Phytochemical examination of the methanolic and aqueous extracts showed the presence of alkaloids, saponins, steroids, tannins/ phenolics, flavonoids, proteins and carbohydrates. It was concluded that the extracts of crown contains important constituents for pharmacological activities.

Keywords: *Solanum melongena*; eggplant; phytochemical screening; Crown

Introduction

Solanum melongena (Eggplant) fruit popularly known as aubergine (UK), melanzana, garden egg, brinjal (India) [1] and is one of the most important vegetable crops grown on over 1.7 million ha world wide. China, India, Bangladesh, Nepal and Srilanka accounts for about 75% of eggplant production [2].

The name eggplant derives from the shape of the fruit of some varieties, which are white and shaped very similarly to chicken eggs. The color, size, shape of the eggplant fruit vary significantly with the type of eggplant cultivar. Eggplant contains a higher content of free reducing sugars, anthocyanin, phenols, glycoalkaloids (solasodine) and amide proteins. Bitterness in eggplant is due to the presence of glycoalkaloids. Eggplant is known to have some medicinal properties and is said to be good for diabetic patients. It has also been recommended as an excellent remedy for liver complaints [3].

It is observed that most of the people do not eat that crown part of the fruit. Therefore the objective of this study was to evaluate several types of phytochemical constituents that are present in the Crown of eggplant fruit.

Materials and methods

The *Solanum melongena* fruits were purchased from the local market, crown were removed from the fruit and dried under the shed and powdered. All the reagents were freshly prepared and were of analytical grade.

Extraction

Powdered crown of *Solanum melongena* (250 g) were successively extracted with methanol and distilled water with the help of soxhlet apparatus. Extracts were dried and percent yield was calculated. Same procedure was repeated with 250 g of powdered fruit.

Phytochemical screening

The methanolic and aqueous extracts of the crown and fruit were separately subjected to preliminary phytochemical tests using standard methods. The Mayer's, Hagner and Hagner's test were carried out for alkaloids. Foam and hemolytic test for saponins. Lieberman-Burchard and Salkowski for steroids/triterpenoids. Schinoda test for flavonoids. FeCl₃, Lead acetate and potassium dichromate test for tannins and phenolics. Sudan IV test for fatty acids, molisch test for carbohydrates and ninhydrin test for proteins [4].

Result and Discussion

Extraction

The various extracts obtained were dried, weighed and percentage yield were calculated as depicted in the table 1, percentage yield of methanolic extracts was found to be higher than that of aqueous extracts of crown as well as fruit. It shows that methanolic extract contain much more constituents than aqueous extract

Table 1 Percentage yield of extracts from *Solanum melongena*

Part	Percentage yield of extracts	
	Methanolic Ext %	Aqueous Ext %
Crown	7.3±0.03	4.7±0.05
Fruit	8.9±0.04	5.2±0.07

Values are means three readings ± SE

Phytochemical Screening

The results of the phytochemical test carried out on the various extracts were recorded as shown in table 2. Preliminary phytochemical screening revealed the presence of alkaloids, saponins, steroids, tannins, flavonoids, proteins and carbohydrates in both crown as well as in fruit. Phytochemical constituents in the various part of the plant vary significantly.

Alkaloidal extracts of *Solanum melongena* leaves showed analgesic effects and some CNS depression but no anticonvulsant action [5]. Noda *et.al.* isolated nasunin from eggplant peel and evaluated for antioxidant activity[6]. Eggplant fruit do contain ascorbic acid and phenolics both which are powerful antioxidants [7]. The presence of saponins and glycoalkaloids protects plant from microbial pathogens. Paczkowski *et al.* studied the biosynthesis of steroidal saponin and glycoalkaloids [8].

Results reveals that the crown has quite a number of chemical constituents, which may be responsible for many pharmacological activities, further work is required to investigate the extracts of crown for various pharmacological activities.

Table 2 : Summary of phytochemical screening

Chemical Constituents	Tests	Crown		fruit	
		ME	AE	ME	AE
Alkaloids	Mayers test	++	+	+++	+
	Wagners test	+	-	-	+
	Hagers test	+	-	+	+
Saponins	Foam test	+	++	-	++
	Heamolytic test	-	+	-	-
Phytosterols	Salkowski test	++	+	+	+
	Liebermann-Burchard	-	-	+	+
Fats and oil	Sudan IV	-	-	++	-
Tannins/Phenolics	FeCl ₃	++	+	+++	++
	Lead acetate	+	-	+	+
	Pot. Dichromate	+	-	++	+
Flavanoids	Shinoda test	+++	++	+++	+++
Proteins	N Ninhydrin test	+	+	++	++
Carbohydrates	Molisch's test	++	+	+++	++

ME= Methanolic extract, AE= Aqueous extract;

+++ = Copiously present; ++ = Moderatly Present; + = Slightly Present; - = Absent

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