



Evaluation of Analgesic potential of extracts of the fruits and roots of *Solanum melongena*.

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ABSTRACT:

It is a vegetable that may be found all year round and is readily available. There have been a great number of studies carried out on the fruit, as well as its peel, crown, and leaves. For this reason, it was essential to conduct research on the phytochemical and pharmacological activity of each and every component of *Solanum melongena*. Attempts were made to attain standardisation by conducting research on every facet of *Solanum melongena*, including both macroscopic and microscopic examinations. First and foremost, the establishment of the botanical quality control for any crude pharmaceutical is the initial step that must be taken before moving on to further study. According to the findings of a qualitative chemical test that was carried out on numerous extracts of *Solanum melongena*, it was discovered that several fractions of the root, leaf, stem, aerial part, and fruits included alkaloids, phenols, sugars, flavonoids, and sterols. According to the findings of the current research, the root and fruit extracts of *Solanum melongena*, both in aqueous and ethanolic forms, have the potential to alleviate pain.

Introduction

Solanum melongena is a plant that is primarily grown for the purpose of producing food and medicinal. It is commonly referred to as the "egg plant ant" (Linn.). The leaves are coarsely lobed, the flowers range in colour

from white to purple, and the fruit is a berry. Melongenaterpenes[1] are a type of sesquiterpene that can be found in the brinjal, which is the fruit of the aubergine plant. Oral administration of these flavonoids at a dosage of 1 milligramme per one hundred grammes of body weight per day results in a major reduction in the



levels of cholesterol found in the blood[2]. The results of additional research demonstrated that flavonoids isolated from aubergine, also known as brinjal, possess a powerful antioxidant activity. The flavonoids, tropane, glycoalkaloids, arginine, lanosterol, gramisterol, and amino acids that are found in the plant are considered to be three of its most important components. It has been suggested that the plant possesses a variety of medicinal properties, including anti-inflammatory, antioxidant, [3], antiasthmatic[4], hypotensive[5], hypolipidemic, central nervous system-depressant[6], and anaphylactic reaction inhibitory effects. Solanoflavone, a replacement for biflavonol glycoside, was extracted from the aerial part of eggplant and shown to be an isolated compound. The results of phytochemical screening assays showed that five different substances, including steroids, alkaloids, saponins, tannins, resins, flavonoids, and terpenoids, displayed favourable results[7-8]. The antioxidant, analgesic, hypolipidemic, asthma, and antiallergic characteristics of *S. melongena* L. pharmacological study research.[9-14]

Methodology:

The preparation of the extracts.

A number of different solvent extraction methods were utilised in the production of plant extracts. A succession of solvents, ranging from non-polar to polar, were used to remove the dried plant materials, which included the leaf, stem, aerial section, and fruits. These dry plant materials were ground into powder. Whoa, whatman In order to filter the plant extracts before placing them in a beaker, the first layer of filter paper was utilised. Each extract was dried until it had a constant dry weight, and then the filtrates were analysed. The leftovers were stored at a temperature of four degrees Celsius for subsequent use.

In addition to having analgesic qualities, the fruits and roots of *Solanum melongena* include extracts that are both ethanolic and aqueous in nature.

When administered with ethanolic and aqueous extracts, the medicine is safe to use up to a dose of 2,000 milligrammes per kilogramme of body weight, according

to studies on acute toxicity. An increase in reaction time is often considered to be a key metric of analgesic efficacy, and this effect was utilised hot plate of Eddy and the Heat Conduction Method, both of which utilised thermal stimuli. In the preliminary phytochemical investigation, flavanoids, tannins, polysaccharides, and phytosterols were found to be present. Because of these findings, it is possible to draw the conclusion that *Solanum melongena* possesses powerful analgesic qualities. In summary, this research provides evidence that *Solanum melongena* possesses analgesic effects, which may be of assistance in explaining some of the ethnomedical applications of this herbal remedy.

Extracts of plants have been shown to have acute toxicity. Following the guidelines outlined in OECD recommendation 425 (OECD, 1992), the research was carried out. For the purpose of an overnight fast, three female Swiss mice weighing between 20 and 25 grammes were obtained and housing was provided for them. Following the measurement of the animals' body weight the following day, oral plant extracts were administered to the animals at a dose of 2000 miligram/kilogram combined with 0.3% weight-to-volume CMC. After that, the animals were examined for illness and death at 0,1/2,1,2,4,6,8,12, and 24 hours after the initial examination. In the four hours that followed the administration of the dosage, the animals were given food, and six hours after that, their body weight was determined. Ptosis, diminished grip strength, convulsions, tremors, and dilated pupils were among of the symptoms that indicated the presence of morbidity. The animals were observed twice a day for a period of fourteen days, and their current body weight was recorded. The experiment was repeated on three mice weighing between twenty and twenty-five grammes. This was done because the animals that were used in the phase I inquiry did not exhibit any indicators of clinical toxicity.

Results

Anaesthetic effects can be achieved through the use of ethanolic and aqueous extracts of the fruits and roots of *Solanum melongena*.



According to research on acute toxicity, medications that contain ethanol and aqueous extracts are safe to take up to a dose of three thousand milligrammes per kilogramme. According to the findings of the current research, the root and fruit extracts of *Solanum melongena*, both in aqueous and ethanolic forms, have the potential to alleviate pain. An increase in reaction time is often considered to be a key metric of analgesic efficacy, and this effect was demonstrated in the experimental models that utilised Eddy's hot plate and the Heat Conduction Method, both of which utilised thermal stimuli. In the preliminary phytochemical investigation, flavanoids, tannins,

polysaccharides, and phytosterols were found to be present. When the two extracts were subjected to statistical analysis with the Tukey Kramer Multiple Comparison Test, it was found that both of them exhibited analgesic efficacy when compared to the control. Taking into consideration these findings, one could draw the conclusion that *Solanum melongena* possesses powerful analgesic qualities. In summary, this research provides evidence that *Solanum melongena* possesses analgesic effects, which may be of assistance in explaining some of the ethnomedical applications of this herbal remedy. (The first and second tables).

(Table 1 & 2). Table 1: Analgesic activity of Ethanolic and aqueous root extracts of *Solanum melongena* by hot plate of Eddy method

S.N.	Test Groups	Dose (in miligram/kg)	Response Time (Mean \pm S.E.M.)
1	Control		2.47 ± 0.0127
2	Standard	9	$10.91 \pm 0.2031^{***}$
3	Aqueous Ext	500	$5.14 \pm 0.0324^{**}$
4	Aqueous Ext	1000	$6.09 \pm 0.0161^{***}$
5	Ethanolic Ext	500	$7.82 \pm 0.0375^{***}$
6	Ethanolic Ext	1000	$9.31 \pm 0.0168^{***}$

Each value is Mean \pm S.D. r is the regression coefficient for n = 3.

Table 2: Analgesic activity of aqueous and Ethanolic fruit extracts of *Solanum melongena* by heat conduction method

S.N.	Test Groups	Dose (in miligram/kilogram)	Response Time (Mean \pm S.E.M.)
1	Control		2.415 ± 0.1857
2	Standard	9	$10.9 \pm 0.0121^{***}$
3	Aqueous Ext	500	$4.7 \pm 0.1262^{***}$
4	Aqueous Ext	1000	$5.9 \pm 0.0276^{***}$



5	Ethanol Ext	500	$3.421 \pm 0.1431^{***}$
6	Ethanol Ext	1000	$6.326 \pm 0.1381^{***}$

Each value is Mean \pm S.D. r is the regression coefficient for n = 3.

In the case of the aqueous extract and the ethanolic root extract, the response times were 5.14 and 6.09 for dosages of 500 and 1000 miligram/kilogram, respectively, and 9.31 and 7.82 for dosages of 10.91.

The response times for the aqueous and ethanolic fruit extracts were 4.7 and 5.9, and 3.4 and 6.3, respectively, for dosages of 500 and 1000 miligram/kilogram. These values were obtained during the experiment.

The root and fruit extracts of *Solanum melongena*, both in aqueous and ethanolic forms, have the potential to alleviate pain. An increase in reaction time is often considered to be a key metric of analgesic efficacy, and this effect was demonstrated in the experimental models that utilised Eddy's hot plate and the Heat Conduction Method, both of which utilised thermal stimuli. When administered at dosages of 500 and 1000 miligram/kilogram, respectively, the reaction times for the aqueous and ethanolic root extracts were 5.14 and 6.09, while the response times for the 10.91 dose were 7.82 and 9.31. The response times for the aqueous and ethanolic fruit extracts were 4.7 and 5.9, and 3.4 and 6.3, respectively, for dosages of 500 and 1000 miligram/kilogram. These values were obtained during the course of the experiment.

Concluding remarks and discussion

According to research on acute toxicity, the drug is safe to use up to a dose of three thousand milligrammes per kilogram when it is mixed with extracts that are ethanolic and aqueous. According to the findings of the current research, the root and fruit extracts of *Solanum melongena*, both in aqueous and ethanolic forms, have the potential to alleviate pain. When administered at dosages

of 500 and 1000 miligram/kilogram, respectively, the reaction times for the aqueous and ethanolic root extracts were 5.14 and 6.09, while the response times for the 10.91 dose were 7.82 and 9.31. The response times for the aqueous and ethanolic fruit extracts were 4.7 and 5.9, and 3.4 and 6.3, respectively, for dosages of 500 and 1000 miligram/kilogram. These values were obtained during the course of the experiment.

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