A Comparative Study On Phytochemical Screening Of Passiflora Flavicarpa And Passiflora Edulis

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Abstract- *Medicinal plants have been used by mankind because of its therapeutic value. Passiflora edulis is one of the fruit belongs to Passifloraceae. Phytochemical analysis provides wide knowledge of plants chemical constituents. Comparative study on phytochemical analysis of P. flavicarpa and P.edulis indicates the presence of phytocomponents like phenols, flavonoids, alkaloids, cardiac glycosides, tannins, saponins, carbohydrate, steroids, protein and amino acid. The ethanolic leaf extract of P. flavicarpa and P. edulis were compared. The better results were by Passiflora edulis f.edulis. These results related to high medical potential value of plant.*

Keywords- P. flavicarpa, P.edulis, phytocomponents, ethanol, leaf extract.

I. INTRODUCTION

Phytochemicals are bioactive non-nutritive plant compounds that contribute different type of activities from inhibiting cancer cell proliferation to protecting against oxidative damage that prevent cardiovascular disease and multiple cancers [(1-5).] The components like phenolic, flavonoids, tannins, cardiac glycosides are suggested to be the major bioactive components having health benefits. Phytochemical screening is a major process used for evaluating a plant's photochemical constituents.Phytochemical components which act as a natural defense system for host plants.

The plant based traditional medicine systems continues to play an essential role in human health, nearly about 80% of the world's inhabitants relaying mainly on traditional medicines for their primary health care[(6)]. Medicinal plants have the ability to synthesize a wide variety of chemical compounds that are use to perform important biological functions and to defend against attack from predators.

Passiflora edulis (passion fruit) was introduced in Hawaii in 1880. Today passion fruit is grown in tropical areas worldwide, with millions of people enjoying its rich store of nutrients. . Leaf of passion fruit is mainly used for treating diabetes, anxiety, insomnia and seizure disorders. There are mainly three species of *Passiflora edulis* are found, among that the two species are yellow fruit (*P. flavicarpa)* and purple fruit (*P. edulis*).Purple fruit have more flavonoids and other constituents when compared with yellow fruit, but its seed is more acidic than purple. So it is important to make a comparative study between the *P. flavicarpa and P. edulis*

II. MATERIALS AND METHODS

Collection of plants:

Healthy fresh leaves of *P. flavicarpa and P. edulis* were collected from Kerala, Kozhikode district. The plants leaves were cleaned and after that air-dried at room temperature for two weeks, coarsely powdered using mixer grinder and stored in a glass container at 4^0C until ready for use.

Ethanolic extract:

20g of the powdered leaf samples were weighed added 200ml of ethanol was left to stay for 72 hours through intermittent shaking. At the end of the extraction of 72 hours the filtrate was collected and kept to dryness at a temperature of 100^0C in a water bath. The residue obtained was covered with aluminum foil and stored in refrigerator at 4^0C for the further use [(7)]

Phytochemical Analysis:

The ethanolic extract was subjected to preliminary phytochemical analysis in order to detect the presence of various types of phytoconstituents like alkaloids, flavonoids, tannins, phenol, carbohydrate [(8, 9)]

Detection of alkaloids:

2 ml of extract was dissolved individually in diluted HCL and filtered.

Wagner's test; 1 ml of filtrates were treated with Wagner's reagent (Iodine in potassium iodide). Formation of brown or reddish precipitate indicates the presence of alkaloids
Hager's test; 1 ml of filtrates were treated with Hager's reagent (saturated Picric acid solution).Presence of alkaloids confirmed by the formation of yellow coloured precipitate.

Detection of flavonoids :

Lead acetate test; To 1ml of extract were treated with few drops of lead acetate solution. Formation of yellow colour precipitate indicates the presence of flavonoids.

Alkaline reagent test; To 1ml of the extract added few drops of 1% sodium hydroxide solution. The appearance of yellow colour indicates the presence of flavonoids.

Detection of phenols:

Ferric chloride test; To 1ml of the plant extract added 20µl of 1% ferric chloride. The appearance of bluish black precipitate indicates the presence of phenol.

Detection of tannins:

Ferric chloride test; To 1ml of the extract added 10ml of distilled water. The solution was then filtered and then added few drops of 0.1% ferric chloride slowly to the filtrate. The appearance of brownish green colour indicated the presence of tannins

Gelatin test; To the 1ml of extract, 1% gelatin solution containing sodium chloride was added. Formation of white precipitate indicates the presence of tannins.

Detection of Saponins:

Foam test; 0.5g of extract was shaken with 2ml of water. If form produced persists for 10 minutes it indicates the presence of saponins.

Froth test; 0.5g of extract were diluted with distilled water to 20 ml and this was shaken in a graduated cylinder for 15 minutes .Formation of 1 cm layer of foam confirms the presence of saponins.

Detection of carbohydrate:

2ml of extracts were dissolved individually in 5 ml distilled water and filtered. The filtrates were used to test for the presence of carbohydrates

Molisch's test; Filtrates were treated with 2 drops of alcoholic alpha-naphthol and concentrated sulphuric acid was added along the sides of the test tube. Purple colour or reddish violet coloured ring at the junction indicates the presence of carbohydrates

Benedict's test; Filtrates were treated with Benedict's reagent and heated gently orange red precipitate indicates the presence of reducing sugars

Detection of glycosides:

Killer Killani test; To 2ml of the plant extract added 1ml of glacial acetic acid. To that added 1% ferric chloride solution drop by drop and then added concentrated sulphuric acid along the sides of the test tube. The appearance of reddish brown and turns to greenish blue colour indicates the presence of glycosides.

Modified Borntrager's test; To 1ml of extract was treated with ferric chloride solution and immersed in boiling water for about 5 minutes. The mixture was cooled and extracted with equal volume of benzene. The benzene layer was separated and treated with ammonia solution. Formation of rose pink colour in the ammonical layer it confirm the presence of anthranol glycosides.

Detection of sterols:

Salkowski test: To 1ml of the plant sample added few drops of chloroform, acetic anhydride and concentrated sulphuric acid. The appearance of dark pink or red colour indicates the presence of steroids.

Detection of protein and amino acids:

Xanthoproteic test; The 1ml of extract was treated with few drops of concentrated nitric acid. Formation of yellow coloured indicates the presence of proteins

Ninhydrine test; To 1ml of extract, 0.25%w/v ninhydrine reagent was added and boiled for few minutes. Formation of blue colour indicates the presence of amino acid.

III. RESULT AND DISCUSSION

Table 1: Showing the comparative phytochemical screening of *P. flavicarpa and P. edulis*

TEST	*P. flavicarpa*	*P.edulis*
Alkaloids	++	+++
Flavonoids	++	+++
Phenols	+++	+++
Tannins	+++	++
Saponins	+	–
Carbohydrate	+	+
Cardiac glycosides	++	++
Sterols	+	-
Protein and amino acid	+	+

'+++'=high amount, '++'= moderate amount, '+'= less amount, '-'=absence

Comparative phytochemical screening of *P. flavicarpa* and *P. edulis* were done in ethanolic extract to detect the secondary metabolite and reducing sugars [(10)].

P. flavicarpa and *P. edulis* shows the presence of following phytoconstituents like phenols, flavonoids, alkaloids, cardiac glycosides, tannins, saponins, carbohydrate, steroids, protein and amino acid. Whereas saponins and steroids are absent in *P. edulis*, however other phytocomponents shows more amount.

IV. CONCLUSION

The current comparative study revealed that ethanolic leaf extract of *P. flavicarpa* and *P. edulis* were excellent source of bioactive phytoconstituents like phenols, flavonoids, alkaloids, cardiac glycosides, tannins, carbohydrate, proteins and amino acids. Saponins and steroids are absent in *P. edulis*, where these phytocomponents are present in *P. flavicarpa*. Phytochemical screening of medicinal plants an important role in identifying new source of therapeutically and industrially used compounds.

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