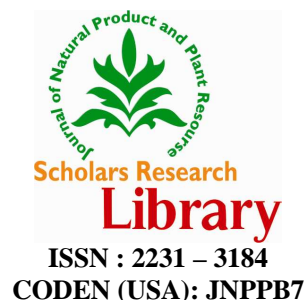




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Quantification of Flavonoid and Phenol content from *Macrosolen parasiticus*(L.) Danser

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ABSTRACT

This paper presents Flavonoid and phenol content of methanolic and aqueous extract of the stems of the plant Macrosolen parasiticus (L.) Danser, Loranthaceae, an important plant in the Indian system of medicine. Macrosolen parasiticus (L.) Danser a parasitic plant belongs to the family Loranthaceae commonly known as mistletoes. The family comprises about 60 genera and 700 species and is widely distributed in all tropical regions and also in the southern land masses. Its species are mostly woody perennials which occur as aerial parasites of other dicotyledons. In the present study the Flavonoid and phenol content of methanolic and aqueous stem extract of Macrosolen parasiticus was evaluated by the method Singleton A.L et.al and Chia-Chi chang et.al respectively. Total phenolic content for methanolic and aqueous extracts were found to be 88 and 122 mg/g and total flavonoid content were found to be 22.5 and 6.8 mg/g.

Keywords: Flavonoid, *Macrosolen parasiticus*, polyphenols, mistletoes, phenol content.

INTRODUCTION

Traditional knowledge about plants has become treasure trove and cultural heritage of many nations. Therefore it is very important to preserve and protect the traditional knowledge and also establish a data base of traditional medicine, this will help to conserve and retrieve the information to benefit of mankind [1]. *Macrosolen parasiticus* Loranthaceae is a perennial climbing woody parasitic plant. Growing on different host plants. The family comprises about 60 genera and 700 species and is widely

distributed in all tropical regions and also in the southern land masses. Its species are mostly woody perennials which occur as aerial parasites of other dicotyledons [2]. Preliminary phytochemical screening revealed the presence of Preliminary phytochemical screening mainly revealed the presence of carbohydrates, phytosterols, fixed oils and phenolic compounds, saponins, proteins and flavonoids [3] The present study describes the Flavonoid and phenol content of methanolic and aqueous stem extract of *Macrosolen parasiticus*

MATERIALS AND METHODS

Chemical and reagents

All chemicals and solvents were of analytical grade quercetin was obtained from Sigma Chemicals, USA and gallic acid from Nice Chemicals, Mumbai. The other chemicals used were procured from Ranbaxy Fine Chemicals Ltd. for whole study.

Plant material and preparation of the extracts Plant material

The stem of *Macrosolen parasiticus* was collected from in and around Manipal, Karnataka, India during the month of September. The plant was authenticated by Dr. Gopalakrishna Bhat, Department of Botany, Poorna Prajna College Udupi, Karnataka, India. A voucher specimen (PP 565) has been deposited in the Department of Pharmacognosy, Manipal College of Pharmaceutical Sciences (Manipal, India).

The stems were shade dried, coarsely powdered and about 100 g of powder was extracted with methanol by hot extraction process (soxhlet). After completion of the extraction the solvent was recovered by distillation and concentrated *in vacuo*. The aqueous extract was prepared by maceration process with 100g of the stem powder using Chloroform: water (1:99) for seven days, after completion of the extraction the solvent was recovered by distillation and concentrated

Total Phenolic Content

Total soluble phenolics in the extracts were determined with Folin-Ciocalteu reagent using gallic acid (50-250 µg) as a standard phenolic compound. 1.0 mL of extract solution containing 1.0 mg extract was diluted with 46 mL of distilled water in a volumetric flask. 1.0 mL of Folin-Ciocalteu reagent was added and the content of the flask mixed thoroughly. 3 min later 3.0 mL of 20% sodium carbonate was added and the mixture was allowed to stand for 2 h with intermittent shaking. The absorbance of the blue color that developed was read at 760 nm. The concentration of total phenols was expressed as gallic acid equivalents in mg/g of dry extract [4].

Total flavonoid content

Aluminum chloride colourimetric method was used for determination of flavonoids. To the 10 mL volumetric flask 2 mL of water and 1 mL of plant extract (1 mg/mL) were added. After 5 min 3 mL of 5 % sodium nitrite and 0.3 mL of 10 % aluminum chloride were added. After 6 min, 2 mL of 1 M sodium hydroxide was added and the volume made up to 10 mL with water. Absorbance was measured at 510 nm. The percentage of total flavonoids were calculated from Calibration curve of quercetin (10-250 µg) plotted by using the same procedure and total flavonoids was expressed as quercetin equivalents in milligrams per gram sample [5].

RESULTS

Total phenolic content for methanolic and aqueous extracts of *Macrosolen parasiticus* were found to be 88mg/g and 122 mg/g respectively when compared with gallic acid (R^2 value – 0.9974) (Fig. 1) and total flavonoid content for methanolic and aqueous extracts of *Macrosolen parasiticus* were found to be 22.5mg/g and 6.8mg/g respectively when compared with quercetin (R^2 value – 0.997) (Fig. 2).

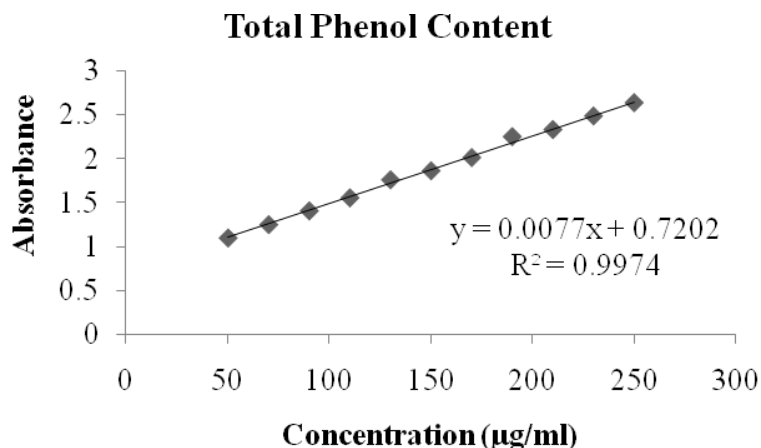


Fig 1: Standard plot of Gallic acid

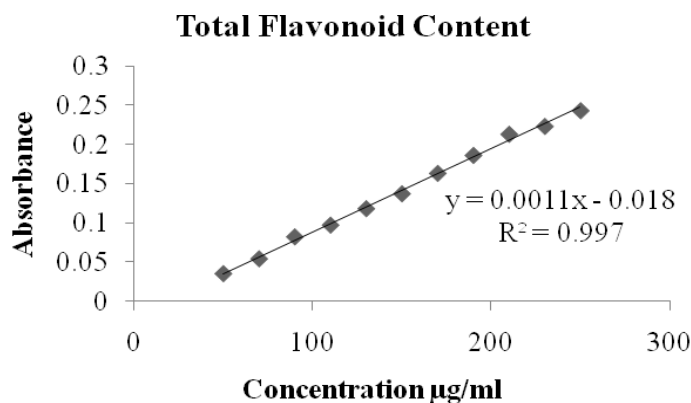


Fig 2: Standard plot of Quercetin

Table 1: Total phenolic and flavonoid content of methanolic and aqueous extracts of *Macrosolen parasiticus*

Fraction	Phenolic content (mg/g)	Flavonoid content (mg/g)
Methanolic extract	88	22.5
Aqueous extract	122	6.8

DISCUSSION

Total Phenolic Content - Phenolics present in fruits and vegetables have received considerable attention because of their potential antioxidant activities [6]. Phenolic compounds undergo a complex redox reaction with phosphotungstic and phosphomolybdic acids present in the Folin–Ciocalteu reagent [7]. However, it should be noted that some chemical group of amino acids, proteins, organic acids, sugars and aromatic amines could react with the reagent.

Total flavonoid content [8] Flavonoids are one of the most diverse and widespread group of natural compounds, are probably the most important natural phenolics. These compounds possess a broad spectrum of chemical and biological activities including radical scavenging properties.

CONCLUSION

The results obtained in the present study indicate that *Macrosolen parasiticus* stem extracts contain good amount of phenolic and flavonoid content and can be used as a of natural source antioxidant that could have great importance as therapeutic agents in preventing or slowing the progress of aging and age associated oxidative stress related degenerative diseases.

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