

Review Article

EVALUATION OF FLAVONOID CONTENTS FROM SOME MEDICINAL TREE SPECIES OF PALI DISTRICT OF RAJASTHAN

***Kapoor B.B.S. and Sunita Swami**

Department of Botany, Herbal Research laboratory, Dungar College, Bikaner 334001, India

**Author for Correspondence*

ABSTRACT

Evaluation of flavonoid contents from three selected medicinal tree species growing in Pali district of Rajasthan like *Acacia leucophloea*, *Anogeissus latifolia* and *Boswellia serrata* was carried out. The leaves of selected trees collected from three different sites i.e. Desuri, Ghanerao and Khandwa areas of Pali district were analysed for flavonoid contents i.e. Quercetin and Kaempferol. Flavonoid contents like Quercetin and Kaempferol were isolated and identified. Among all the plant samples tested the total flavonoid contents were found maximum (2.24 mg/g.d.w.) in the leaves of *Boswellia serrata* collected from Desuri area and minimum (1.74 mg/g.d.w.) in the leaves of *Anogeissus latifolia* collected from same area.

Keywords: *Flavonoid Contents, Medicinal Tree Species, Pali District, Rajasthan*

INTRODUCTION

Pali district of Rajasthan is rich in medicinal tree species with a wide range of habitats. These medicinal tree species are good source of phytochemicals of pharmaceutical interest such as flavonoids, sterols, alkaloids, phenolic compounds, sulphides, isothiocyanates, anthocynins, terpenoids etc. A number of plant species have been screened by many workers for evaluation of antimicrobial principles like flavonoids (Nag *et al.*, 1988; Singh *et al.*, 1988; Ahmed *et al.*, 1999; Ahmed *et al.*, 2001; Kapoor and Ranga, 2003; Kapoor and Kumar, 2005; Kapoor and Mishra, 2013; Kapoor and Purohit, 2013; Kapoor and Pandita, 2013; Kapoor and Kumar, 2014).

MATERIALS AND METHODS

Present investigation describes the isolation, identification and quantitative estimation of flavonoid contents from leaves of three selected medicinal tree species growing in Pali district of Rajasthan like *Acacia leucophloea*, *Anogeissus latifolia* and *Boswellia serrata*.

The leaves of all the three selected tree species taken for present investigation were collected from three different areas Desuri, Ghanerao and Khandwa of Pali district. These were washed with tap water to remove dust, wiped off with cotton and separately cut to small pieces. The plant parts were dried at 100°C for 15 minutes to inactivate the enzymes followed at 60°C till the constant weight was achieved in each case. Each of the dried materials was finally powdered and used for estimation of flavonoids.

Dried and powdered leaves of the selected plant species were collected from Bikaner district and separately soxhlet extracted with 80% hot ethanol^[10]. On a water bath for 24 hrs. Each of the extracts was concentrated and concentrate re-extracted with petroleum ether (Fraction-I), ether (Fraction-II) and ethyl acetate (Fraction-III) in succession.

Fraction-III was dried in vacuo and the resultant was hydrolysed with 7% H₂SO₄ for 2 hrs. The mixture was filtered and the filtrate extracted with ethyl acetate. Concentrated ether and ethyl acetate fraction were applied on TLC.

Plates along with standard reference compounds and the plates developed with the solvent system n-butanol, acetic acid and water (4:1:5) when kaempferol and quercetin were detected.

The compounds were isolated by preparative TLC and crystallized, mp (quercetin 309°-311° C and kaempferol 271°- 273° C). IR spectra compared well with their authentic samples. Quantitative estimation of flavonoid contents was carried out by method (Kariyone *et al.*, 1993; Naghski *et al.*, 1975 for quercetin and Mabry *et al.*, 1970 for kaempferol).

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RESULTS AND DISCUSSION

Quercetin and Kaempferol were isolated and identified. Their quantitative estimation is given in the following Table 1.

Table 1: Flavonoid Contents (mg/g.d.w.) from Leaves of Selected Tree Species

| Plants | Plants parts | Quercetin | Kaempferol | Total Flavonoid Contents |
|-----------------------------|--------------|-----------|------------|--------------------------|
| <i>Acacia leucophloea</i> | Leaves I | 1.06 | 0.98 | 2.04 |
| | Leaves II | 0.96 | 0.90 | 1.86 |
| | Leaves III | 1.22 | 0.83 | 2.05 |
| <i>Anogeissus latifolia</i> | Leaves I | 0.92 | 0.82 | 1.74 |
| | Leaves II | 1.04 | 0.90 | 1.94 |
| | Leaves III | 0.96 | 0.87 | 1.83 |
| <i>Boswellia serrata</i> | Leaves I | 1.33 | 0.91 | 2.24 |
| | Leaves II | 0.98 | 0.78 | 1.76 |
| | Leaves III | 1.28 | 0.89 | 2.17 |

I - Desuri area II- Ghanerao area III- Khandwa area

The maximum quercetin (1.33 mg/g.d.w.) was found in the leaves of *Boswellia serrata* collected from Desuri area while minimum (0.92 mg/g.d.w.) in the leaves of *Anogeissus latifolia* collected from same area.

The maximum amount of kaempferol (0.98 mg/g.d.w.) was found in the leaves of *Acacia leucophloea* collected from Desuri area while minimum (0.78 mg/g.d.w.) in the leaves of *Boswellia serrata* collected from Ghanerao area.

Among all the plant samples tested the total flavonoid contents were found maximum (2.24 mg/g.d.w.) in the leaves of *Boswellia serrata* collected from Desuri area and minimum (1.74 mg/g.d.w.) in the leaves of *Anogeissus latifolia* collected from same area.

Conclusion

The medicinal tree species growing in Pali district of Rajasthan are potential source of antimicrobial principles (flavonoids). These are resistant to bacterial and fungal attacks due to presence of biologically active substances i.e. flavonoids. These retain potentialities to synthesize the flavonoid contents which are active principles against bacterial as well as fungal pathogens. Due to presence of these secondary products the selected medicinal tree species can be used in drug and pharmaceutical industries.

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