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Flavonoid Contents from Some Medicinal Tree Species of Nagaur District Of Rajasthan

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ABSTRACT

Evaluation of flavonoid contents from four selected medicinal tree species growing in Nagaur district of Rajasthan like *Acacia tortilis*, *Prosopis cineraria*, *Salvadora persica* and *Tecomella undulata* was carried out. The leaves of selected trees collected from three different sites of study area 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 (7.75 mg/g.d.w.) in the leaves of *Tecomella undulata* from Khinvsar area and minimum (2.18 mg/g.d.w.) in the leaves of *Acacia tortilis* from Alaye are.

Keywords: Flavonoid contents, Medicinal tree species, Nagaur district, Rajasthan

1. Introduction

Nagaur 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. These are the active principles which act as antioxidants, anticarcinogenic, antimicrobials and immunity stimulants. A number of plant species have been screened by many workers for evaluation of antimicrobial principles like flavonoids^[1-9].

2. Materials and Methods

Present investigation describes the isolation, identification and quantitative estimation of flavonoid contents from leaves of four selected medicinal tree species growing in Nagaur district of Rajasthan like *Acacia tortilis*, *Prosopis cineraria*, *Salvadora persica* and *Tecomella undulata*. Leaves of these selected trees were collected from three different sites Alaye, Khinvsar and Merta areas of study area. 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 of Kariyone *et al*^[11] and Naghski *et al*^[12] for quercetin and Mabry *et al*^[13] for kaempferol.

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3. 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 Plant Species

Plants	Plant parts	Quercetin	Kaempferol	Total Contents
<i>Acacia tortilis</i>	Leaves I	0.98	1.20	2.18
	Leaves II	1.12	1.73	2.85
	Leaves III	1.22	1.87	3.09
<i>Prosopis cineraria</i>	Leaves I	2.56	3.12	5.68
	Leaves II	2.39	3.74	6.13
	Leaves III	2.52	3.69	6.21
<i>Salvadora persica</i>	Leaves I	1.70	2.16	3.86
	Leaves II	1.64	2.33	3.97
	Leaves III	1.75	2.52	4.27
<i>Tecomella undulata</i>	Leaves I	2.90	4.50	7.40
	Leaves II	2.83	4.92	7.75
	Leaves III	2.97	4.76	7.73

I Alaye Area II Khinvsar Area III Merta Area

The maximum quercetin (2.97 mg/g.d.w.) was found in the leaves of *Tecomella undulata* from Merta while minimum (0.98 mg/g.d.w.) in the leaves of *Acacia tortilis* from Alaye area.

The maximum amount of kaempferol (4.92 mg/g.d.w.) was found in the leaves of *Tecomella undulata* from Khinvsar area while minimum (1.20 mg/g.d.w.) in the leaves of *Acacia tortilis* from Alaye area.

Among all the plant samples tested the total flavonoid contents were found maximum (7.75 mg/g.d.w.) in the leaves of *Tecomella undulata* from Khinvsar area and minimum (2.18 mg/g.d.w.) in the leaves of *Acacia tortilis* from Alaye area.

4. Conclusion

The medicinal tree species growing in Nagaur district of Rajasthan are potential source of antimicrobial principles. 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.

5. Acknowledgement

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