



Original Research Article

Sterol contents from some fabaceous medicinal plants of Rajasthan desert

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ABSTRACT

Evaluation of sterol contents from three selected medicinal plant species of Fabaceae family growing in Rajasthan Desert was carried out. The roots, shoots and fruits of *Clitoria ternatea*, *Sesbania bispinosa* and *Tephrosia purpurea* were analysed for sterol contents. β - Sitosterol and Stigmasterol were isolated and identified. Maximum sterol contents were observed in shoots of *Sesbania bispinosa* (0.29 mg/g.d.w.), whereas minimum in roots of *Tephrosia purpurea* (0.15mg/g.d.w).

1. Introduction

Rajasthan Desert is rich in medicinal plant species. This region exhibits a great variety of geological, physiographical, climatic, edaphic and biotic conditions and represents diversity of medicinal tree species, which occur on a wide range of habitat. These medicinal plant 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 steroidal contents [1-9]. The present investigation describes the isolation and identification of Sterol contents from roots, shoots and fruits of selected medicinal plants of family Fabaceae like *Clitoria ternatea*, *Sesbania bispinosa* and *Tephrosia purpurea*.

2. Materials and Methods

Fully matured and healthy roots, shoots and fruits of all selected plant species were collected from chhatargarh area of Bikaner district. The dried and powdered plant parts of selected medicinal plants were used for extraction of sterols. Each of the dried samples was hydrolysed with 30% hydrochloric acid (2 gm/20 ml) for 4 hours on a water bath. The hydrolysed test samples were filtered and washed with distilled water till the filtrate attained pH 7. Test samples so obtained were dried at 60°C for 8 hours and Soxhlet extracted in benzene (200 ml) for 24 hours separately [10]. Each of the benzene extracts of the various test samples were dried in vacuo and taken up in chloroform for further analysis by Thin Layer Chromatography method [11].

3. Results and Discussion

β - Sitosterol and Stigmasterol were isolated and identified. Their quantitative estimation is given in the following Table 1.

Table 1: Sterol contents (mg. /g.d.w) from plant parts of selected medicinal plant species

Name of Sterol	<i>Clitoria ternatea</i>			<i>Sesbania bispinosa</i>			<i>Tephrosia purpurea</i>		
	Roots	Shoots	Fruits	Roots	Shoots	Fruits	Roots	Shoots	Fruits
<i>β-sitosterol</i>	0.06	0.08	0.09	0.14	0.15	0.11	0.09	0.11	0.07
Stigmasterol	0.09	0.12	0.07	0.08	0.14	0.13	0.08	0.06	0.11
Total Sterol Contents	0.15	0.20	0.16	0.22	0.29	0.24	0.17	0.17	0.18

The present investigation shows (Table 1) that among all the three samples tested the total sterol contents were found to be Maximum in shoots of *Sesbania bispinosa* (0.29 mg/g.d.w.), whereas minimum in roots of *Tephrosia purpurea* (0.15 mg/g.d.w.).

The maximum β - sitosterol (0.15 mg/gdw) was found in shoots of *Sesbania bispinosa* while minimum (0.06 mg/g.d.w.) in roots of *Clitoria ternatea*.

The maximum amount of Stigmasterol (0.14 mg/gdw) was found in shoots of *Sesbania bispinosa* while minimum (0.06 mg/g.d.w.) in shoots of *Tephrosia purpurea*.

In all the selected medicinal plant species of Fabaceae family growing in Chhatargarh area of Bikaner district, presence of β -sitosterol along with stigmasterol have been reported. These plants have sufficient amount of sterols and could be a good source for pharmaceuticals.

4. Conclusion

The medicinal plant species, under study area are potential source of secondary products. These retain potentialities to synthesize the sterol contents which play active role in metabolism. Due to presence of these secondary products in the Fabaceous medicinal plant species growing in Rajasthan Desert can be used in drug and pharmaceutical industries.

Conflict of interest statement

We declare that we have no conflict of interest.

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References

1. Akhisa T and Kokke W. 1991, "Naturally occurring sterols and related compounds in plants". In Patterson, G. W.; Nes, W. D. *Physiology and Biochemistry of Sterols*. Champaign, IL: American Oil Chemists' Society. 172–228.
2. Al-Yahya MA. Phytochemical studies of the plants used in traditional medicine of Saudi Arabia. *Fitoterapia*. 1986; 57(3):179-182.
3. Kapoor BBS and Raksha Mishra Raksha. Sterol Contents from Some Capridaceae Medicinal Plants of North-West Rajasthan. *International Journal of Medical and Pharmaceutical Sciences Research and Review*, 2013;1 (2):1- 6.
4. Sauerwein M Yoshimatsu K and Shimomura K. Further approaches in the production of secondary metabolites by plant tissue cultures. *Plant Tissue Culture Lett*. 1992;9: 1-9.
5. Savikin Fodulovic Katarina Grubisic Dragoljub Culafic Ljubinka Menkovic Nobojsa Ristic Mihailo. Diosgenin and phytosterols content in five callus lines of *Dioscorea balcanica*. *Plant Science (shannon)*. 1998;135(1): 63-67.
6. Singh D and Nag TN. Steroidal components of seeds of *Peganum harmala* growing in Rajasthan. *Comp. physiol. Ecol*. 1981;6(3):163-164.
7. Valsta L M Lemström A Ovaskainen M L Lampi A M Toivo J Korhonen T Piironen V. Estimation of plant

sterol and cholesterol intake in Finland: Quality of new values and their effect on intake. *British Journal of Nutrition*. 2007;92 (4): 671–8.

8. Vieno P, Jari T, Riitta P and Anna M L. Plant sterols in vegetables, fruits and berries. *J. Sci Food Agric*. 2003;83: 330-337.
9. Zirvi K A and But A. Chemical Investigation of Germinated *Peganum harmala* Seeds. *Pak J. Sci Ind Res*. 1971:14.
10. Nag TN, Mathur CS and Goyal SC. Phytochemical studies of *Tribulus alatus*, *T. terrestris* and *Agave*

wightii for Primary and Secondary Products. *Comp. physiol. Ecol*. 1979;4: 157-160.

11. M.R. Heble, S. Narayanaswami, M.S. Chadha. Diosgenin and β -Sitosterol: Isolation from *Solanum Xanthocarpum* Tissue Cultures. *American Association for the Advancement of Science, Stable*, 1968;161(13), 1145.

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