

Indian Butter Tree: An excellent source of nutrition and livelihood generation

Rashmi Sehrawat^{1&2}

1. Chemistry and Bioprospecting Division, Forest Research Institute Dehradun, Uttarakhand, India

2. Indian Council of Forestry Research and Education (ICFRE), Dehradun, India

E-mil: rashmi@icfre.org

ABSTRACT

Cheura (*Diploknema butyraceae*) belonging to Sapotaceae family, is an important oil seed of tree-origin, distributed from India (Garhwal, Kumaun eastward to Sikkim) to Nepal and Bhutan (sub Himalayan tracts and outer Himalayan ranges). In India, it occurs abundantly in Uttarakhand region. Fatty Oil in kernels known as phulwa or phulwara ghee and is used for cooking and frying of vegetables and food. It is also used for preparing medicines, ointment, candles, cream and other user friendly products. The cake produced after processing of Cheura is used as manure and has pesticidal properties. Keeping the above facts in view, the present study was undertaken to evaluate the nutritional aspects and preliminary phytochemical analysis of cheura seeds. A high performance thin layer chromatography method for the separation of active constituents has been developed which would be helpful in identification and isolation of the chemical markers present in cheura seeds. Qualitative analysis of the different extracts of the plants has been done by the standard methods and with the help of this analysis nature of the compounds which have been present in the plant is being identified. This study will further help in developing the value added products from cheura seeds.

Key words: Cheura (*Diploknema butyraceae*), Sapotaceae, tree borne oil seed, nutritional aspects, analysis, value addition. Sustainable forest management, Economic Development, Biodiversity conservation, Adaptive and integrated management, Research.

OBJECTIVE

✓ **Phytochemical and Nutritional analysis of *Diploknema butyraceae* seeds**

INTRODUCTION

Botanical Name : *Diploknema butyraceae*, syn *Madhuca butyraceae*

Common Name : Indian Butter Tree (Cheura)

Family : Sapotaceae

Location : Sub-Himalayan tract



- Flowering occurs in winter season and the fruits ripen in June–July.
- Fatty oil yield is 42-47% of the weight of seeds.
- The oil is of white color and has pleasant taste and odour.
- The major acid is Palamitic acid content (56.6%). It is also used for preparing medicines, ointment, candles, cream and other user friendly products.
- The cake produced after processing of Cheura is used as manure.
- It has pesticide properties and used as wormicide, nematicide, rodenticide and insecticide.

INNOVATIVE APPROACH/ METHODOLOGY

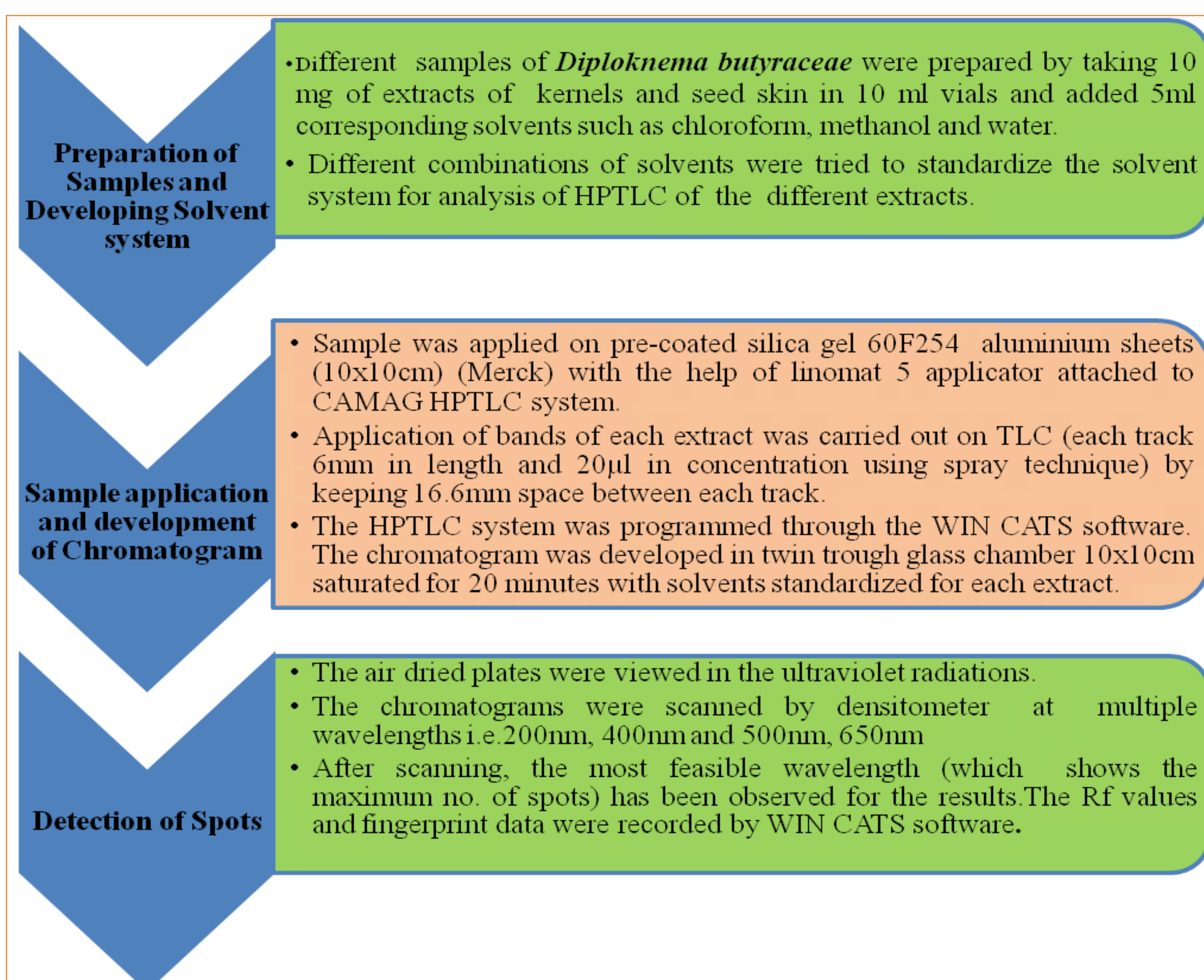


Table 1. R_f values of the chromatogram of kernels

Peaks	R _f values		
	chloroform extract*	methanol extract**	aqueous extract***
1	0.02	0.02	0.02
2	0.01	0.07	0.14
3	0.08	0.12	0.21
4	0.23	0.21	0.32
5	0.31	0.24	0.39
6	0.58	0.33	0.50
7	0.72	0.35	0.68
8		0.61	0.81
9		0.68	
10		0.81	
11		0.81	

Solvent System: *Ethyl acetate: Pet ether (15:85), **Chloroform: Methanol: Water (13:7:2) and ***Chloroform: Methanol: Water (16:6:1)

RESULTS

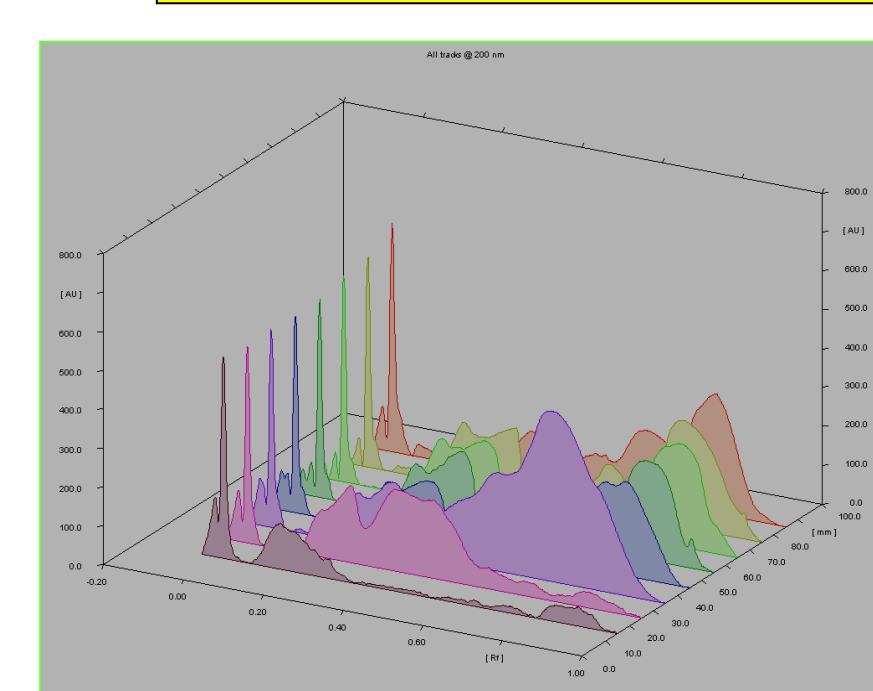


Fig.1 Densitogram for chloroform extract of kernels at 200nm

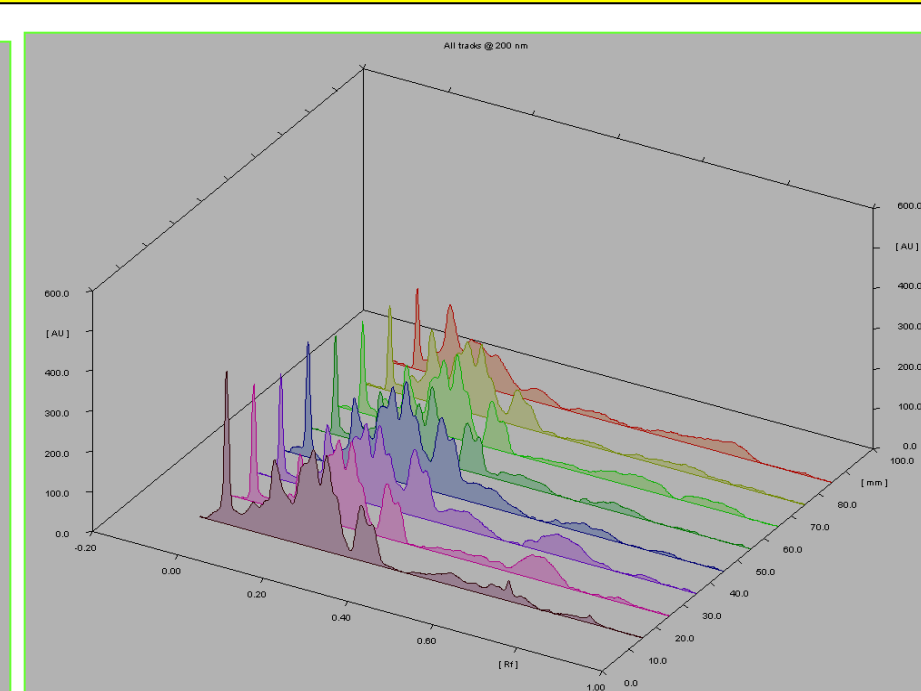


Fig.2 Densitogram for methanol extract of kernels at 200nm

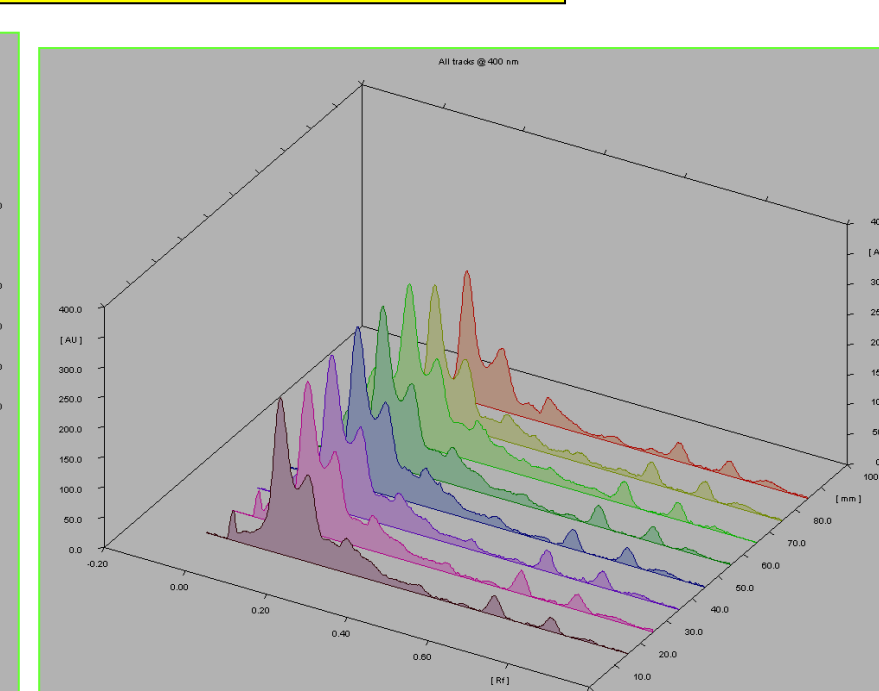


Fig.3 Densitogram for aqueous extract of kernels at 400 nm

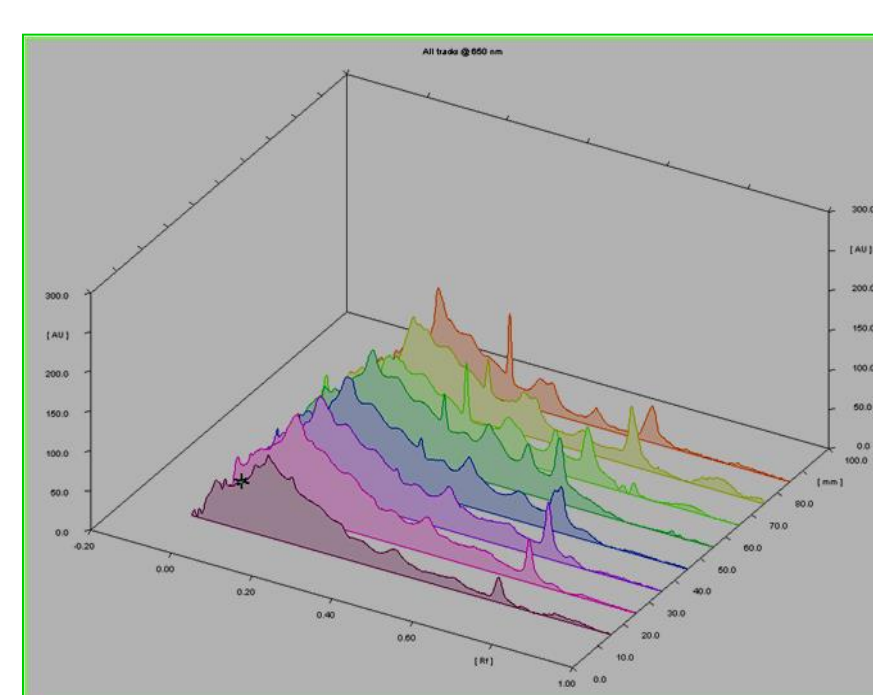


Fig.4 Densitogram for chloroform extract of seed skin at 650nm

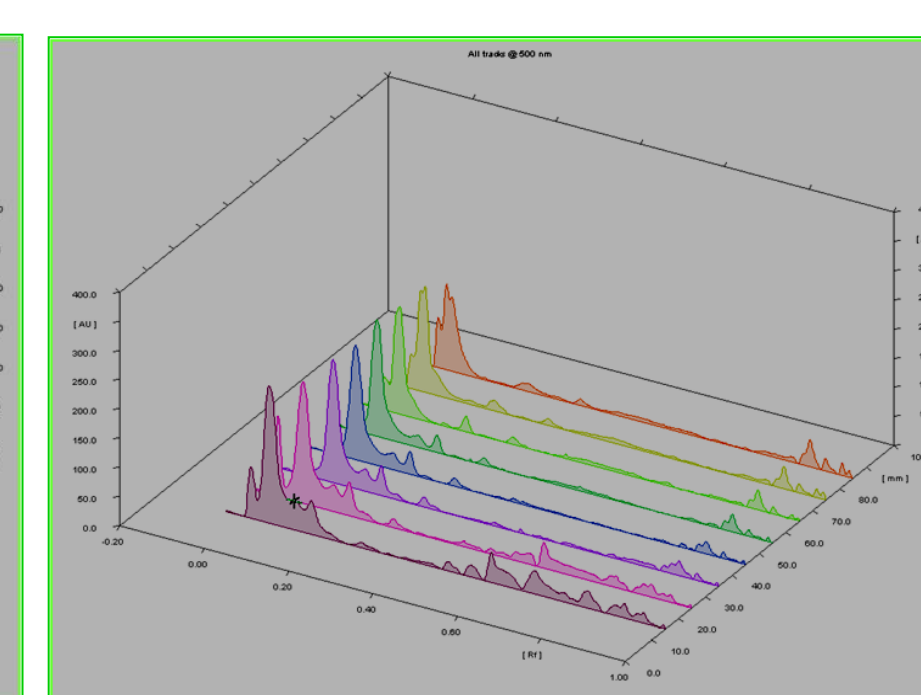


Fig.5 Densitogram for methanol extract of seed skin at 400nm

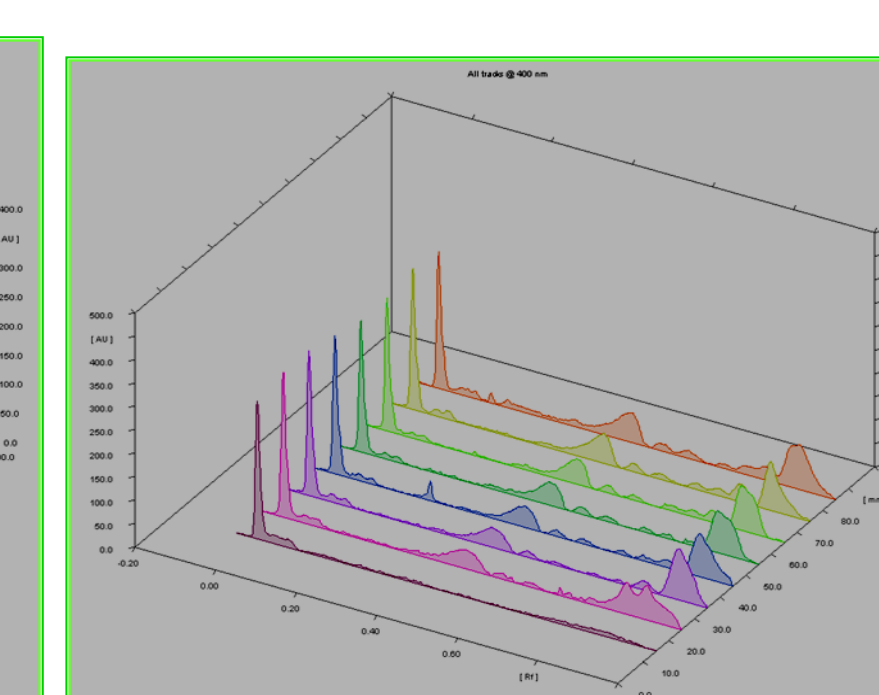


Fig.6 Densitogram for aqueous extract of seed skin at 500 nm

Table 2. R_f values of the chromatogram of seed skin

Peaks	R _f values		
	chloroform extract*	methanol extract**	aqueous extract***
1	0.03	0.02	0.01
2	0.06	0.08	0.06
3	0.13	0.26	0.12
4	0.15	0.42	0.16
5	0.21	0.53	0.48
6	0.26	0.59	0.54
7	0.32		0.61
8	0.43		0.68
9	0.54		0.72
10	0.62		0.81
11	0.74		0.84
12	0.81		

Solvent System-Methanol:Chloroform(20:80), **24%Methanol:Chloroform (25:75) and ***Chloroform: Methanol: Water (13:7:2)

CONCLUSION

- ▶ HPTLC fingerprint profiling of different extractives of kernels and seed skin showed a number of compounds and study will be helpful in pharamocognostical studies of the plant.
- ▶ Cheura seeds are having very high percentage of fatty oil (42-47%) and it is edible also.
- ▶ Adding value to abundantly available Cheura seeds through technological interventions is the best way of augmenting the income and efforts need to be focused in this direction to realize the full potential of medicinally important tree borne oil seeds (TBOs).
- ▶ On the basis of recommendations, farmers can opt for the oilseed as cash crops and they can get good monetary return from *D. butyraceae* crop production, which make them enable to achieve the sustainable livelihood and have tremendous potential to boost the economy of the rural population
- ▶ The areas have a potential to generate income varying between 0.34 and 3.13 lakh INR ha⁻¹.