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Short Communication

THE COMPOSITION AND CHARACTERISTICS OF SEED OIL OF *Celastrus paniculatus* GERMPLASM

V.K. Srivastava, B.M. Singh and R. Gupta

National Bureau of Plant Genetic Resources,
Pusa Campus, New Delhi-110 012

Jyotishmati (*Celastrus paniculatus*) is a large deciduous climber, occurring in sub-Himalayan tracts upto 2000 m in Central India, Western Ghats, Eastern Ghats, extending to Rajmahal hills in Bihar and Orissa upto 1500 m elevation. This hardy species attains plant height upto 18 m in mountain tracts and crevices of rocks and along the bridle paths in the deciduous forests. Its fruit is globular in shape, containing 3 to 6 seeds, enclosed in an orange red aril. The seed and seed-oil are stimulant, nervine tonic and sharpen memory and therefore, is widely used in medicine (Nadkarni, 1976). Germplasm collection from the hills of Uttar Pradesh was made for identification of superior genotypes in yield and physiologically active terpenic alkaloids, mainly 'celapanin' and 'celapanigin' (Wagner et al., 1974). Its cultivation is expected to meet increasing demand of the seed oil in pharmaceutical industry.

Seeds were collected from wild populations at different altitudes in the northern hills of Garhwal district in Uttar Pradesh and compared with market samples from Delhi and Indore originating from N.E. Andhra Pradesh and Central India respectively. Fixed oil was extracted from ground seed. This involved continuous hot extraction with petroleum ether (40-60°) in a soxhlet apparatus for 16 hours. The extraction was intially carried out for 8 hours, then the seeds were taken out, dried, again powdered and run for extraction in petroleum ether for next 8 hours. This procedure gave optimum recovery of oil. Physiologically active alkaloids (Wagner *et al.*, 1974) were estimated in the seed as total alkaloids following general method for estimation of alkaloids (Higuchi and Bodin, 1961). Qualitative characters of the oil were analysed by standard pharmacopoeial method (Anon., 1966).

An analysis of the five accessions collected from different altitudes in U.P. hills and three samples procured from market showed that seed contained approximately 50 per cent (W/W) highly coloured, faintly aromatic, thick and optically active oil (Table 1). Delhi market sample, on analysis gave 0.1815 per cent total alkaloids in the seed. Of this, 0.1634 per cent was estimated in the oil and 0.0098 per cent was found in the defatted seed. It was, thus observed that the alkaloids got extracted alongwith the oil. However percentage of total alkaloids in the seed of wild populations varied from 0.0100 per cent to 0.0580 per cent. The market samples collected from Vindhyan ranges (Indore) of Central India and parts of North-eastern Andhra Pradesh (referred as Delhi market samples) showed higher total alkaloid content ranging from 0.1008 per cent to 0.2709 per cent. In general, acid value of oil in the accessions from U.P. hills was lower than those of market samples except the samples from Sintali (U.P.) and Indore. The accessions from U.P. hills

Table 1. Chemical analysis of *Celastrus paniculatus* seeds collected from Tehri Garhwal (U.P. Hills)

Localities from were collected	Altitude (m)	Oil (W/W) (%)	Colour	Refractive index (27°C)	Sp. Gr. (27°C)	Specific rotation (5 % $CHCL_3$ (Sol.)	Acid value	Ester value	Saponification value	Total seed alkaloids (%)
Wild populations										
1. **Rishikesh**	580	50.55	TPR	1.4715	0.8380	+3°	17.74	266.70	284.49	0.0580
2. **Sintali**	660	46.17	TPR	1.4730	0.8414	+2°	33.56	233.89	287.35	0.0437
3. **Dobata**	750	53.63	TPR	1.4725	0.7958	+2°	14.40	277.75	292.15	0.0372
4. **Takoli**	900	53.85	TPR	1.4720	0.7451	+1°	18.24	262.00	280.24	0.0532
5. **Saknidhar**	1030	56.65	TPR	1.4700	-	+5°	22.52	291.95	314.47	0.0100
Market samples										
*1 **Delhi-I**	-	51.41	TPR	1.4705	0.8314	-	40.42	181.64	222.06	0.1815
*2. **Delhi-II**	-	48.20	TPR	1.4695	0.8768	-	51.93	165.53	217.46	0.1008
3. **Indore**	-	57.76	TPR	1.4710	0.8579	-	11.58	191.84	203.42	0.2709

TPR - Thick Pinkish Red

* Originated from N.E. Andhra Pradesh

possessed high ester and saponification values in their oil. Thus, the materials collected from the upper ranges of U.P. hills were at par in oil content but were found to be poor in total alkaloids content. High saponification values and unusually high acid values were observed as special characteristic of the seed oil and lower acids were earlier shown to be the constituent of esters other than glycerides (Sengupta & Bhargava, 1970). It is therefore, inferred that intensive survey for this species may be carried out in Vindhyan ranges of Central India and parts of North-eastern Andhra Pradesh in order to collect promising materials rich in physiologically active alkaloids.

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