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Short communication

EVALUATION STUDIES ON KALMEGH (*ANDROGRAPHIS PANICULATA* NEES)

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Kalmegh (*Andrographis paniculata*) is an annual herb belonging to the family Acanthaceae. It has a wide distribution beginning from moist shady lands in Himalayan foothills to Indo- Gangetic plains and humid tracts of penninsular India. The plant is 30-90 cm. in height with quadrangular stem, bracteate lanceolate leaves characterised with small winged petiole, slightly undulate margin, acuminate tip and covered with hairs all over the leaf lamina. It bears small white-purple bi-lipped flowers with dark purple tinged petals during November to January The fruit is a linear capsule containing 8-12 seeds The herb contains compound andrographalide in varying quantities is a terpenoid with unsaturated lactone responsible for its bio- activity (Talukdar, 1968).

The whole herb is used in ayurvedic medicines for its alterative, antihelmintic, antipyretic, antihistamic, febrifuge and chologogue properties. It is extensively given as a remedy for fevers. It is also used as an cheaper substitute of Chirayata, *Swertia chirata*. In allopathic system of medicines it is given to tone up liver functions (Chopra 1958). Although kalmegh is extensively used in Indian system of medicines, but it is not yet cultivated. The supply of herb is met from the wild growing populations which is now under constrain. No systematic studies have been made. Considering to its value as a drug raw material the authors have initiated a study on evaluation of wild growing populations with a view to identify a suitable genotype for introduction into agriculture. The present communications is based on these studies. A total of 10 population samples assembled from various parts of India were first raised in well prepared nursery plots at NBPGR Issapur farm during first week of June 1991. The seedlings at 40-45 days of age were transferred to field at a distance of 60 cm × 30 cm in the first week of August when they attained 10-15 cm. height. The crop was given necessary interculture and irrigation.

The herb samples were collected after 100 days when it begins flowering during November, second sample was collected at pod setting stage in January and third at seed setting stage in March. The samples were shade dried and were analysed for its content by liquid chromatographic method (Srivastava 1991). Observations were taken on the following characters based on average of three plants 1) plant height cm. 2) no. of branches/plant 3) no. of leaves/plant, 4) leaf color, 5) stem characters, 6) fresh wt./plant 7) dry wt./plant 8) pod length 9) no. of seeds/pod 10) percentage andrographalide content, 11) 100 seed wt. 12) Biological yield. It was observed that at vegetative stage, the plant height ranged from 20 cm. (VG 001) to 48cm. (VG002), whereas at flowering stage the maximum was in IC-111288 (50 Cm.) and minimum in VG001 (34 cm.). IC-111284 showed a bushy habit with 4-6 branches whereas all other accessions have none or one/two branches except the main stem. Leaves are the main yield attributing character as it contains the andrographalides, the pharmacological active compounds. IC-111288 gave maximum number of leaves both at vegetative and flowering stages. In IC-111287 and IC-111288 showed dark green leaves with blackish purple lower surface whereas other accessions have lighter colour than this. Physical testing also indicate that leaves of IC-111287 and IC- 111284 are more bitter than others.

A maximum of 2.4cm. pod length was recorded in IC-111289 and IC-111285 recorded lowest pod length of 1.5 cm. at vegetatively stage. Accordingly

Table 1. Some promising lines of Kalmegh

Accession No.	Vegetative stage	Harvesting stage	Late Harvested Sample
	*gm/@gm/%	*gm/gm/%	*gm/@gm/%
IC-111286	10/-/1.90	8/3.78/0.20	7/3.02/2.85
IC-111287	12/-/3.02	12/4.16/0.19	24/11.2/5.0
IC-111288	11.5/-/0.23	20/3/40/2/55	30/14.4/6.2
IC-111289	18/-/1.10	22/11.36/0.35	-
VG-001	8/-/1/20	7/1.34/0.39	28/12.5/5.7
VG-002	14/-/-	15/7.46/0/14	18/7.6/4.25

*Fresh wt/@ Dry wt/ % andrographalide

number of seeds per pod was also maximum in IC-111289 (12-14) and lowest in IC- 111286 (4-6). Number of pods per plant at harvesting stage was highest in IC-111288 (132) and lowest in IC-111291 (18-20). Fresh herb yield on per plant basis was maximum in IC-111289 (20.3gm) at vegetative stage and 22gm. at harvesting stage whereas minimum in VG-001 (9.0) at vegetative stage and 7gm. at harvesting stage. Maximum dry herb was obtained in IC-111289 (11.36gm.) and minimum in VG-001 (2.3gm). The biological yield per row was

highest in IC-111289 (203 gm. and 220 gm.) and lowest in VG-001 (90 gm & 70 gm) at both the stages. Andrographalide content: It was noted that at vegetative stage maximum content was in IC-111287 (3.02%) whereas at harvesting stage IC-111288 showed maximum content of 2.55 per cent.

In *Andrographis paniculata*, main yield attributing characters are fresh wt./dry wt. and andrographalide content. Persual of data recorded shows that biological yield is directly correlated to the percentage andrographalide content. Highest biological yield is recorded in IC-111289 (180 gm./row/10 plts.) and maximum alkaloid content of 3.02 per cent is recorded in 1C-111287 at vegetatively stage. Similarly at flowering stage maximum yield is again recorded in 1C-111289 (220 g.) and maximum andrographolide content is found in 1C-111288 (2.55%). Although seasonal variations in andrographalide content are reported by Maiti *et al.* (1959). An interesting feature is noticed when late harvested nursery raised plants were analysed comparatively high percentage of andrographolide content of 6.2 per cent and 5.7 per cent is recorded in IC-111288 and VG-001 respectively viz., an increase of 50-60 per cent.

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