

Yield and Quality of Peppermint as influenced by Time of Harvest

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ABSTRACT

Estimation of menthol, methone and neomenthol contents in the oils of *Mentha sp.* (EC-41911), obtained during different times of harvest viz., April, July and October at Bangalore revealed that, menthone content was minimum in the oil from July harvested herbage. The contents of essential oil and menthol were also highest in July. It is suggested to harvest the herbage in July to obtain high yields of good quality oil.

INTRODUCTION

Peppermint oil is used extensively in pharmaceutical, confectionary and flavour industries. Menthol and menthone are the major constituents of the oil. Good commercial mentha oils must have high menthol content but must be low in menthone which imparts an undesirable bitter taste to the oil. (The pharmacopoeia prescribes a minimum of 50% total menthol). The present study was conducted to determine the best time of harvest for obtaining high yield of good quality peppermint oil under Bangalore conditions.

MATERIALS AND METHODS

Three strains of *Mentha* species viz., Black Mitcham (*M. piperita*), EC 41892 and EC 41911 (Russian introduction) were planted at the research farm of IIHR Bangalore in R B D with 5 replications during February 1989 and 1990. Recommended cultural practices were followed to raise a healthy crop. Herbage samples could be

collected only from EC 41911 as the other strains failed to put up good herbage growth.

Herbage was harvested first in April (full bloom stage) followed by 90 days intervals in July and October in both the years. About 250 gms of freshly harvested herbage was hydrodistilled in a Clevenger's apparatus for 4-5 hours (till no more oil was recovered). Each treatment was replicated thrice. The oil collected was dried over anhydrous sodium sulphate and its yield was recorded. The menthol, menthone and neo menthol contents of the oil were determined by a Hewlett Packard gas chromatograph fitted with FID and a stainless steel column packed with 10% caxbowax on chromosorb. A temperature programming of 165-185°C at a rate of 2°C/min. was employed. Menthol, menthone and neomenthol contents of the oil were determined by area normalisation.

RESULTS AND DISCUSSION

The oil yield and menthol, menthone and neomenthol contents of the herbage harvested in

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1989 and 1990 are presented in Tables-1 and 2 respectively. Treatment differences for oil yield were significant at 5% level while those for menthol, menthone and neomenthol contents were highly significant in both the years. The oil yields was maximum in the herbage harvested in July followed by October and April while menthol content of the oil was maximum in July followed by April and October. As can be seen from the tables the decrease in menthone content is associated with increases in menthol and neomenthol contents. This is in conformity with the observations of Burbott and Loomis (1969) who found that the loss of methone was accompanied by accumulation of menthol but menthol formed was not sufficient to account for the menthone that disappeared. However, in the present study, the total amount of neomenthol and menthol formed was equivalent to the amount of menthone that disappeared. This supports the finding of Croteau and

Martinkus (1979). Whether menthone is simultaneously converted to menthol and neomenthol, by two different biosynthetic pathways or is it first converted to neomenthol and then to menthol is yet to be understood. Menthone content of the oil was minimum in July harvested herbage in both the years. Therefore for obtaining best quality of mint oil under Bangalore conditions it is advisable to harvest the herbage in the month of July.

REFERENCES

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Table 1 : Mean oil yield, menthol, neomenthol and menthone contents at different stages of harvest (1989)

Time of harvest	Oil yield on FWB(%)	Menthol (%)	Neomenthol (%)	Menthone (%)
April	0.75	62.26	1.52	13.63
July	0.95	66.18	3.04	10.16
October	0.83	61.13	4.29	12.13
GM	0.84	63.19	2.95	11.97
SEM	0.03	0.82	0.44	0.55
CD 5%	0.03	2.10	1.21	1.60
CV%	1.42	1.66	20.49	6.68

Table 2 : Mean oil yield, menthol, neomenthol and menthone contents of mentha oil at different stages of harvest (1990).

Time of harvest	Oil yield on FWB(%)	Menthol (%)	Neomenthol (%)	Menthone (%)
April	0.79	68.43	3.84	9.62
July	1.10	70.46	6.34	6.02
October	0.98	67.29	3.24	8.83
GM	0.95	68.73	4.47	8.16
SEM	0.05	0.32	0.07	0.08
CD 5%	0.21	1.27	0.26	0.32
CV%	9.77	0.81	2.62	1.76