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RESULTS AND DISCUSSION

Oil yield is a function of oil content in green herbage as oil content increases when the crop has left for 24 hrs after harvest as the moisture loss results in oil content increase. But the oil quality which is the resultant of various other components get deteriorated as the time passed from morning to evening or vice-versa. Moreover, the genotype and management conditions such as harvesting time, plant age and crop density also influence the qualitative characters of many aromatic plants (Marroti et al., 1994). The occurrence of polyploidy in the genus Mentha is common both at intra and interspecific levels (Harley and Brighton, 1977; Singh and Sharma, 1986).

From karyologic point of view shows a large variation in chromosome number ranging from $2n=36$ to 120 with base number $x=12$, owing to the change in the biosynthetic pathway resulting in the change of essential oil quality. The most common chromosome no. ($2n=72$) is associated with Menthol content ranging from 60–70 percent (Chemotype MP-1,2,3,4,6,8,10,11,12) while MP-9 AND MP-7 shows basic chromosome number $2n=36$ and MP-5 with $2n=48$ and Pulegone interaction in the essential oil. Further, Bhardwaj (1989) has reported that menthol content, an important constituent of essential oil was found significantly correlated with oil content as was found obvious from above table. Patra et al. (1988) have concluded that there exists a positive relationship between oil and menthol content. The variation in the amount and quality of oil produced from leaves of different ages on the same plant has been demonstrated in peppermint. The

MATERIALS AND METHODS

M. piperita clones namely MP-1 to MP12 were grown in RCBD (Randomized complete block design) in plot size 5x3 meters each with basal dressing. Crop harvested twice one after 70 – 90 days and other after 120 days of plantation. And oil distilled in Clevenger apparatus and were tested for its quality content using Perkin-Elmer's GLC apparatus. The essential oil was reported to possess well balanced aroma with 70 – 90 % menthol on an average with green herbage and oil yield. Somatic chromosome numbers were studied from root tips of plants using acetocarmine stain. Photomicrographs were taken from temporary slides using bright field phase contrast attachment of Zeiss Standard 16 research microscope.

ABSTRACT

Evaluation for essential oil composition and to assess the change in quality of essential oil with age, harvesting time and maturation phase M. piperita clones namely MP-1 to MP12 were taken under study. It was found that nine cultivars with basic chromosome number $2n=72$, were best suited under fluctuating environments with respect to oil content and quality as well with more than 70 % menthol content.

KEYWORDS: Mentha piperita, Menthol, Acetocarmine, Menthone

Mentha piperita L. commonly known as peppermint is a chief genus of family lamiaceae (Labiatae) and is commercially valuable due to its essential oil which is used in cough syrups, toothpastes, pain relieving balms and creams, mouthwashes, shaving creme and chewing gums. The principle constituent in the oil of Mentha is Menthol which is reported to be converted from biosynthetic pathway of Pulegone – Menthone – Menthol – Menthy acetate except for slow conversion rate of menthone to menthol in peppermint (Murray et al., 1972). The oil quality plays a vital role in its market value as it degrades after harvesting, while kept for certain period of time. The paper deals with role of harvesting time along with ploidy status on the oil quality and content as well.

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EFFECT OF HARVESTING TIME ON CHANGE IN OIL QUALITY OF Mentha piperita L. CHEMOTYPES

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ABSTRACT

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variation was assumed to represent the effect of time on terpene synthesis (Battaile and Loomis, 1961). However, in the above results have been in conformity but the time variation may be attributed either due to maturation of oil glands with age or genetic factors that play role in hindrance of biosynthetic pathway resulted in accumulation of menthol or Pulegone the end product of terpene conversion.

Evaluation for essential oil composition revealed that seventy percent population synthesize terpenoids of maternal types (menthol and menthone). While the rest had those of paternal type (carvone pulegone) and related compounds. In the present study, as reported earlier (Kassahun et al., 2011) the efforts have been made to assess the change in quality of essential oil with age, harvesting time and maturation phase. It has been reported that nine cultivars were best suited under fluctuating environments with respect to oil content and quality as well with more than 70% menthol contents.

**REFERENCES**


