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Effect of solvent on recovery and quality of lemongrass (*Cymbopogon flexuosus* stapf.) oil

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ABSTRACT - An experiment was carried out in laboratory to study the effect of solvent (acetone) on quantity and quality of essential oil of lemongrass (*Cymbopogon flexuosus* Stapf.) Material of four varities/genotype *i.e.* CKP-25, OD-19, OD58 and HL-2were procured form the research farm of CCS HAU, Hisar. Solvent (acetone) in various amounts *viz*., 3,6,9 and 12 ml was added in required amount of water thereby maintaining 0.2 per cent, 0.4 per cent, 0.6 per cent and 0.8 per cent level of acetone in water. The experiment was performed in three replicates for each variety. All distilled out essential oil was analyzed by gas chromatography (GC) fitted with flame ionization detector (FID) and equipped with capillary column thermo TR-WAX. The oil content increased from 0.57 per cent to 0.60 per cent in comparision to control (0.53%). Qualitative analysis of oil recovered by adding solvent (acetone) at various concentrations showed that desirable constituents *i.e.* citral-a, citral-b and total citral content decreased approximately by 2 per cent in comparison to control.

Key words - Cymbopogon flexuosus, Essential oil, Gas chromatography, Solvent effect

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Among all types of plants in the world, about 1500 species are considered aromatic and therefore, they are all significant for the production of essential oils. India is one of the important essential oil producing and exporting country of the world. India ranks 28th in imports and 14th in exports in global trade of essential oils. The place of pride among the essential oils earning foreign exchange package mainly goes to oil of Lemongrass, because it is the chief source of citral which find innumerable use in perfumery, cosmetics, flavouring, medicines and in the synthesis of vitamin A, geraniol and ionone. Essential oils are distilled volatiles, odoriferous substances of plant materials that have strong aromatic components. Essential oils find varied uses as carminative, antiseptic, sedative, central nervous system stimulants, anti-stress and muscle relaxants.

Lemongrass belongs to the genus *Cymbopogon* Spreng (family Gramineae Syn. Poaceae) consists of about 140 species (Chase and Niles, 1962). Lemongrass oil is mobile, yellow to reddish brown in colour and is a rich source of monoterpenoids. Due to presence of important chemical constituents, Lemongrass oil has commercial value. In a good quality Lemongrass oil (Guenther, 1977), contents of aldehydes *i.e.* citral-a (geranial) 40 – 48 per cent and citral-b (neral) 30 – 37 per cent should be maximum and geranyl acetate (6.7%), geraniol (2.9%), methyl heptenone (1.9%), citronellal (1.1%), â caryophyllene (0.32%) and â-elemene (0.075%) should be minimum. Citral is the name given to a natural mixture of two isomeric acyclic monoterpene aldehydes: geranial (*trans*-citral, citral-a) and neral (*cis*-citral, citral b). The objective of this study was to determine the effect of solvent addition during distillation and its effect on the quantity and quality of essential oil.

EXPERIMENTAL METHODOLOGY

The materials of four varieties/genotype of