

ABSTRACT

These investigations were carried out to find the difference in the extract of *in vitro* (callus) and *in vivo* (field grown) leaves of *Ocimum. sanctum*. Study comprises of two steps approach, *i.e.* callus formation from leaf of *O. sanctum* and collection of leaves from field grown plants. In the second step phytochemical potential of extracts of both sources was carried out.

The phytochemical examination of the extracts of both *in vivo* and *in vitro* showed the presence of terpenoids, flavonoids and saponins but no steroids. Extracts in solvents, diethyle ether, ethyle acetate, chloroform and butanol, were subjected to thin layer chromatography. The component fractions were detected under UV light. The R_f values of the fractions, were calculated. Extracts were chromatographed and the components identified were eugenol (45.6%), citral (18.4%), chavicol (1.26%), methyl chavicol (3.67%), terpineol (1.36%), and methyle eugenol (2.82%).

The most interesting studies of this project was the difference in activity and composition of essential oils of both *in vitro* and *in vivo* extracts. Leaves of field plants were steam distilled to obtain the essential oil (0.7 %) where as *in vitro* being in a small quantity was extracted by solvent extraction in a Soxhlet apparatus and yield found was 0.3 %.

The essential oil were screened against gram positive (*Staphylococcus aureus*, *Enterococcus faecalis*) and gram negative bacteria (*Klebsiella Spp*, *Pseudomonas aeruginosa*) at three different concentrations using agar diffusion method. The antimicrobial activity was much significant in case of *in vitro* then *in vivo* essential oils.