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Study of microbial biotransformation of volatile oils

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Microbial biotransformation is the chemical reaction performed by micro-organisms and catalyzed by the enzymes within the microbial cell. When a substance cannot be synthesized artificially or is difficult to synthesize, then in such cases, biotransformation processes are useful. Products of biotransformation have a number of important pharmaceutical applications such as anticancer agent, antimicrobial agents, flavoring agents, etc. The current study comprises of evaluation of biotransformation of volatile oil components brought about by the yeast S. cerevisiae. We studied the effect of yeast on volatile oils namely clove oil, orange peel oil, herbs containing volatile oils namely Ajowan seed powder and selective components of volatile oils namely vanillin and menthol. The orange peel oil was extracted by using hydrodistillation method. Sabouraud dextrose broth was used as culture media for the process. The volatile oil substrates viz. clove oil, orange peel oil, were introduced into the culture medium in concentration range of 0.1% to 0.5% v/v and ajowan powder, vanillin and menthol were used in range of 0.1% to 0.5% w/v. The reactions were carried out for 10 days at incubation temperature of 37° C. The reactions were monitored by HPTLC pattern of the chloroform extract of aliquots taken at the interval of 48 hours. The mobile phase used was Hexane-Ethyl Acetate-Glacial Acetic Acid (6.5:3.5:0.5). Amongst the five samples observed the vanillin and orange peel oil showed additional spots in TLC. Whereas, clove oil and menthol did not show any change in TLC pattern; indicative of inhibition of the cell growth at concentration of 0.1% and above. This is an important finding for the point of view of flavoring properties of products of biotransformation.

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