

〈一般論文〉

## 抗菌活性を有する香料の探索

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### Evaluation of Antimicrobial Activities of Fragrance Ingredients

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#### Abstract

Antimicrobial activities of most of the fragrance ingredients have not been precisely estimated because of their highly hydrophobic and volatile characteristics and also of lacking of standardized method for such materials. In the present study, we evaluated the microbial activities of wide variety of fragrance ingredients by a modified method which has been recently developed by authors group based on the standard method described by Clinical and Laboratory Standard Institute (CLSI) for a purpose of researching for a new type of antiseptic agents. A screening examination of antimicrobial activities using *Bacillus subtilis* and *Aspergillus niger* showed that, out of 999 kinds of natural and chemical fragrance ingredients tested, 526 expressed minimum inhibitory concentration (MIC) more than 0.50 (% v/v) and 473 revealed the MIC less than 0.50 against either one or the both microbes. The latter 473 kinds of fragrance ingredients were further analyzed for their antimicrobial activities using additional four species of microbes, *Escherichia coli*, *Pseudomonas aeruginosa*, *Staphylococcus aureus* and *Candida albicans*. Based on MIC against at least one out of the six microbial species, the 473 kinds of the fragrance ingredients were classified into two groups, i.e., MIC 0.10-0.50 (372 kinds) and MIC < 0.10 (101 kinds). It was noticed that, in the latter group, birch tar oil, cassia oil, cinnamon bark oil and carvacrol have potent and wide spectra of antimicrobial activities in range of 0.0099-0.31 that are almost even compared with those of cinnamic aldehyde. Antibacterial analysis of 39 kinds of fragrance ingredients against nosocomial agents revealed that the susceptibilities of MRSA and *S. aureus* standard strain against these fragrance ingredients are almost same, whilst *P. aeruginosa* clinical isolate is much resistant than the standard strain. Four out of 39 kinds of fragrance ingredients showed high-antibacterial activities against *Burkholderia cepacia* and *Serratia marcescens*.

**Key words:** fragrance ingredient, antimicrobial activity, CLSI method, microdilution method, nosocomial infection agents.