

Nongpanga Sangcharoen 2009: Effect of Some Essential Oils and Indigenous Plant Extracts Against Histamine-forming Bacteria Isolated from Scombroid Fish. Master of Science (Fishery Products), Major Field: Fishery Products, Department of Fishery Products. Thesis Advisor: Assistant Professor Pongtep Wilaipun, Ph.D. 169 pages.

Histamine poisoning in human usually caused by scombroid fish consumption. Histamine is produced by some bacteria contaminated in scombroid fish. The isolation of histamine-forming bacteria was carried out from shortbody mackerel, Eastern little tuna and Spanish mackerel. One hundred and sixty-six isolates of histamine-forming bacteria were collected from these samples and *Psychrobacter* sp. strain RK64 showed the highest level of histamine production in culture media.

Determination of antimicrobial activity against the isolated histamine-forming bacteria (strain RK24, strain RK32, strain RK37 and *Psychrobacter* sp. strain RK64) and reference histamine-forming strains (*Morganella morganii* ATCC 25830 and *Lactobacillus* sp. strain H15) of 11 essential oils and 15 ethanolic extracts from indigenous plants were performed. Essential oil of holy basil and ethanolic extract of roselle could inhibit all of 6 tested strains. However, determination of MIC and MBC against the 2 highest level of histamine producing strain indicated that lemongrass oil showed the highest inhibitory effect against *M. morganii* ATCC 25830 (MIC and MBC = 0.78 µg/ml) and *Psychrobacter* sp. strain RK64 (MIC and MBC = 0.14 and 0.17 µg/ml). Antimicrobial activity of lemongrass oil against *M. morganii* ATCC 25830 and *Psychrobacter* sp. strain RK64 was decreased in culture media at pH 6.0-7.0 and 6.0 respectively. In contrast, the influence of incubating temperature, salt content and food processing temperature had no effect on bacterial growth inhibition of lemongrass oil.

In addition, the antimicrobial activity of lemongrass oil against *M. morganii* ATCC 25830 and *Psychrobacter* sp. strain RK64 in shortbody mackerel keeping at different temperature were examined. Lemongrass oil could reduce the total bacteria count and total number of both histamine-forming strains in every treatment. Adding lemongrass oil to the sample and storage at 4°C could extend shelf-life of shortbody mackerel up to 15 days. Consequently, this condition could be applied for reduction of hazard from histamine and extending shelf-life of fish and fish products.

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Thesis Advisor's signature