

Abstract

Staphylococcus aureus is a pathogen of food for human food industry is a serious hazard. This study aimed to evaluation of the chemical composition of Cumin (*Cuminum cyminum*) essential oil and its antibacterial activity in inhibiting of *S. aureus* bacteria (*Staphylococcus aureus*) alone and in combination with nisin in minced meat silver carp was investigated. Extraction of essential oil was performed with using steam distillation method by Clevenger apparatus and its chemical composition was analyzed with using the Gas chromatography-mass spectrometry device. Cumin aldehyde with 27/20% was the main component in cumin essential oil. effect of different concentrations of cumin essential oil (0, 0/015, 0/03, 0/06, 0/09 and 0/1%) and nisin (0, 2/5, 3/5 and 5 µg/g) and combining varying amounts of tow materials on growthing behavior of the bacteria at 4° c temperature over 21days was investigated. The results showed that bacterial growth at various concentrations of cumin essential oil and nisin, respectively has stopped on 12 and 3 day ($p<0.05$). Low concentrations of cumin essential (0/015 and 0/03%) did not have significant differences to inhibit bacterial growth ($p>0.05$). Suitable inhibition effects for *Staphylococcus aureus* growthing was observed at concentrations of 0/09 and 0/1% of cumin essential oil ($p<0.05$). Nisin at all used levels, could stop bacterial growth in different days of keeping period ($p<0.05$). Combination treatments were effective in reducing the rate of bacteria growthing, but treatment oil 1/0% to 2.5 micrograms per gram nisin could stop the growth of bacteria after 6 days ($p<0.05$).

Key words: Silver carp (*Hypophthalmichthys molitrix*), *Staphylococcus aureus*, cumin (*Cuminum cyminum*), essential oil, minced meat



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**Effect of Nisin and *Cuminum cyminum* essential oil on
Staphylococcus aureus in *Hypophthalmichthys molitrix* minced
meat**

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