

INTISARI

PENGARUH PERENDAMAN ASAM HIPOKLORIT TERHADAP BAKTERI PEMBENTUK HISTAMIN PADA *TUNA CUBE* SELAMA PENYIMPANAN

Penelitian ini bertujuan untuk mengkaji pengaruh perendaman asam hipoklorit (HOCl) terhadap penurunan jumlah BPH pada daging *tuna cube* selama penyimpanan, baik pada kondisi monospesies maupun multispesies, serta membandingkan efektivitas HOCl dengan natrium hipoklorit (NaOCl). Penelitian dilakukan menggunakan daging tuna sirip kuning (*Thunnus albacares*) yang diinokulasi dengan bakteri *Morganella morganii* TK07, *Klebsiella pneumoniae* CK 13.2, dan *Raoultella ornithinolytica* TN5. Perlakuan meliputi variasi konsentrasi dan lama perendaman HOCl, serta perbandingan dengan NaOCl selama penyimpanan pada suhu eksperimental 20°C. Parameter yang diamati meliputi Total Plate Count (TPC), kadar histamin, nilai pH, dan *Total Volatile Base Nitrogen* (TVB-N). Hasil penelitian menunjukkan bahwa konsentrasi HOCl berpengaruh terhadap penurunan jumlah BPH baik dalam kondisi monospesies maupun multispesies. Setelah diberi paparan HOCl, terlihat morfologi yang signifikan pada keempat perlakuan terutama pada *Raoultella ornithinolytica* TN5. Hasil analisis *one-way* ANOVA menunjukkan bahwa lama paparan HOCl berpengaruh nyata terhadap persentase penurunan BPH pada model *tuna cube* ($p < 0,05$). Persentase reduksi meningkat tajam dari paparan 15 detik dengan nilai $32,33 \pm 0,58\%$ ke 30 detik dengan nilai $88,00 \pm 10,39\%$, kemudian cenderung stabil hingga 45 detik. Hasil ini menunjukkan bahwa efektivitas HOCl telah mencapai kondisi optimal pada durasi paparan 30 detik sehingga waktu tersebut sudah cukup efektif untuk menurunkan jumlah BPH. Pada beberapa perlakuan, bakteri masih menunjukkan kemampuan tumbuh kembali yang mengindikasikan terjadinya kondisi subletal. Perlakuan perendaman HOCl 100 ppm selama 30 detik memiliki efek yang hampir sebanding dengan NaOCl pada konsentrasi yang sama terhadap penurunan jumlah BPH pada daging ikan *tuna cube* berdasarkan pengujian TPC, TVB-N, dan kadar histamin.

Kata kunci: disinfeksi, *tuna cube*, multispesies, HOCl, FE-SEM,

ABSTRACT

THE EFFECT OF HYPOCHLOROUS ACID SOAKING ON HISTAMINE-PRODUCING BACTERIA IN TUNA CUBE DURING STORAGE

Previous studies have successfully isolated HPB from several types of scombroide fish samples and tested them monospecifically. This study aims to examine the effect of hypochlorous acid (HOCl) immersion on reducing the number of HFB in tuna cube meat during storage, both in monospecific and multispecific conditions, as well as to compare the effectiveness of HOCl with sodium hypochlorite (NaOCl). The study was conducted using yellowfin tuna (*Thunnus albacares*) meat inoculated with *Morganella morganii* TK07, *Klebsiella pneumoniae* CK 13.2, and *Raoultella ornithinolytica* TN5 bacteria. The treatments included variations in HOCl concentration and immersion time, as well as comparisons with NaOCl during storage at 20°C. The parameters observed included Total Plate Count (TPC), histamine content, pH value, and Total Volatile Base Nitrogen (TVB-N). The results showed that HOCl concentration affected the reduction in BPH numbers in both monospecific and multispecific conditions. After exposure to HOCl, significant morphological changes were observed in all four treatments, especially in *Raoultella ornithinolytica* TN5. The results of the one-way ANOVA analysis show that the duration of HOCl exposure significantly affects the percentage reduction in BPH in the tuna cube model ($p < 0,05$). The percentage reduction increased sharply from 15 to 30 seconds of exposure, then stabilized at 45 seconds. This indicates that HOCl's effectiveness reached an optimal level at 30 seconds of exposure, making this duration sufficient to reduce BPH levels. In some treatments, the bacteria still showed the ability to regrow, indicating the occurrence of sublethal conditions. In addition, immersion treatment with 100 ppm HOCl for 30 seconds was effective in reducing the number of BPH in tuna cube meat. HOCl maintained BPH growth for 24 hours after exposure, which was superior to NaOCl as determined by TPC, TVB-N, and histamine content tests.

Keywords: disinfection, *tuna cube*, multispecies, HOCl, FE-SEM