

Aziz Bahtiar Rosidin NIM 22.035.11.00056. Analisis Cemarkan Bakteri *Salmonella* sp. Dan *Shigella* sp. Pada Garam Produksi Teknologi *Flow Down System* (FDS) Dan Konvensional Di Kedai Reka Cipta Garam, Kabupaten Pamekasan. Dibawah Bimbingan **Febi Ayu Pramithasari, S.Pi., M.Si.**

ABSTRAK

Pulau Madura dikenal luas sebagai pusat produksi garam terbesar di Indonesia. Produksi garam yang umum dilakukan menggunakan metode konvensional dan juga metode *Flow Down System* (FDS). Bakteri *Salmonella* sp. dan *Shigella* sp. merupakan bakteri gram negatif yang banyak ditemukan mengkontaminasi produk-produk hasil perairan termasuk produk garam. Tujuan penelitian ini adalah menganalisis nilai *Total Plate Count* (TPC) dan karakterisasi bakteri heterotrof, *Salmonella* sp., dan *Shigella* sp. pada produk garam metode konvensional dan metode *Flow Down System* (FDS), hasil uji fisiologis dan pewarnaan Gram bakteri *Salmonella* sp. dan *Shigella* sp., kemungkinan sumber kontaminasi bakteri *Salmonella* sp. dan *Shigella* sp. pada proses produksi garam konvensional dan FDS, dan standar baku mutu cemarkan bakteri *Salmonella* sp. dan *Shigella* sp. secara regulasi Internasional pada produk garam. Penelitian ini dilakukan pada bulan November tahun 2025 di Laboratorium Biologi, Fakultas Pertanian, Universitas Trunodjoyo Madura. Hasil nilai TPC bakteri heterotrof kedua sampel garam berkisar antara 8,83-9,23 log CFU/ml dengan total 10 jenis bakteri yang ditemukan. Nilai TPC bakteri *Salmonella* sp. berkisar antara 0-1,3 log CFU/ml dengan total 8 jenis yang ditemukan. Nilai TPC bakteri *Shigella* sp. berkisar antara 0-3 log CFU/ml dengan total 3 jenis yang ditemukan. Hasil uji fisiologis katalase dan oksidase bakteri *Salmonella* sp. dan *Shigella* sp. menunjukkan keduanya bereaksi positif pada uji katalase dan oksidase. Uji pewarnaan Gram bakteri *Salmonella* sp. dan *Shigella* sp. mendapatkan hasil bakteri dengan bentuk basil dan berwarna merah muda. Kontaminasi bakteri patogen diduga berasal dari air baku yang terkontaminasi oleh aktivitas masyarakat sekitar, proses sanitasi yang belum baik, lama penyimpanan, penggunaan jenis kemasan dan penggunaan alang-alang pada metode FDS yang diduga telah terkontaminasi bakteri patogen sebelumnya. Standar baku mutu yang ditetapkan negara-negara tujuan ekspor adalah produk garam harus negatif bakteri *Salmonella* sp. dan *Shigella* sp.

Kata kunci: Garam, *Flow Down System*, Metode Konvensional, *Salmonella* sp., *Shigella* sp.

Aziz Bahtiar Rosidin NIM 22.035.11.00056. Analysis of *Salmonella* sp. and *Shigella* sp. Bacterial Contamination in Salt Produced Using *Flow Down System* (FDS) and Conventional Technologies at the Salt Innovation Center, Pamekasan Regency. Under the Guidance of **Febi Ayu Pramithasari, S.Pi., M.Si.**

ABSTRACT

Madura Island is widely known as the largest salt production center in Indonesia. Salt production is generally carried out using conventional methods and also the Flow Down System (FDS) method. Salmonella sp. and Shigella sp. are gram-negative bacteria that are often found to contaminate aquatic products, including salt products. The purpose of this study was to analyze the Total Plate Count (TPC) value and characterization of heterotrophic bacteria, Salmonella sp., and Shigella sp. in salt products using conventional and Flow Down System (FDS) methods, the results of physiological tests and Gram staining of Salmonella sp. and Shigella sp. bacteria, possible sources of Salmonella sp. and Shigella sp. bacterial contamination in conventional and FDS salt production processes, and the quality standards for Salmonella sp. and Shigella sp. bacterial contamination according to international regulations in salt products. This study was conducted in November 2025 at the Biology Laboratory, Faculty of Agriculture, Trunodjoyo University, Madura. The results of the TPC value of heterotrophic bacteria in both salt samples ranged from 8.83-9.23 log CFU/ml with a total of 10 types of bacteria found. The TPC value of Salmonella sp. bacteria ranged from 0-1.3 log CFU/ml with a total of 8 species found. The TPC value of Shigella sp. bacteria ranged from 0-3 log CFU/ml with a total of 3 species found. The results of the physiological catalase and oxidase tests of Salmonella sp. and Shigella sp. bacteria showed that both reacted positively in the catalase and oxidase tests. The Gram staining test of Salmonella sp. and Shigella sp. bacteria produced bacillus-shaped bacteria with a pink color. Pathogenic bacterial contamination is suspected to originate from raw water contaminated by the activities of the surrounding community, inadequate sanitation processes, storage time, the use of packaging types and the use of reeds in the FDS method which are suspected to have been contaminated with pathogenic bacteria previously. The quality standards set by export destination countries are that salt products must be negative for Salmonella sp. and Shigella sp. bacteria.

Keywords: Salt, Flow Down System, Conventional Method, *Salmonella* sp., *Shigella* sp.