

ABSTRACT

Adellah Ghifari Fishabilillah. 24020220140021. Potential of Bacteria from Mangrove Sediment in the Biotransformation of Terpenoids Using Geraniol Precursor and Its Molecular Identification. Under the guidance of Siti Nurjannah and Senlie Octaviana

Terpenoid compounds are sources of fragrance used in the perfume industry. Many fragrance sources come from synthetic materials. Bacteria have the ability to biotransform terpenoid compounds using their secondary metabolites. Geraniol is used as an intermediate precursor to form terpenoid derivative compounds. Bacteria can thrive in modified media, such as coconut water, which provides the nutrients to support bacterial growth in the biotransformation process of terpenoids using geraniol. This study aims to determine the macroscopic and microscopic characterization results of 5 bacterial isolates isolated from mangrove sediments, screen the isolates using the GC-MS method to identify 1 potential isolate, determine the differences in the biotransformation results of 0.1% geraniol in 100% coconut water, 100% nutrient broth, and 50% coconut water + 50% nutrient broth media, and identify the selected bacterial isolate molecularly using the 16s rRNA gene. This study was conducted experimentally using a Completely Randomized Design Factorial (CRD Factorial) by observing the variation of production media factors, namely 100% coconut water, 100% nutrient broth, and 50% coconut water + 50% nutrient broth and sampling times (0, 10, 24, 48, 58, 72, 82, 96, 106, 120 hours) using relative concentration calculations from GC-MS tests. The results of this study showed that the macroscopic characterization of 5 bacterial isolates indicated that the isolates had entire edge shapes, small and punctiform sizes, circular colony shapes, and milky white and yellow colony colors. BS1 was used as the selected potential isolate for biotransformation in the production media. The production media affected the formation of transformation compounds β -myrcene, Z- β -ocimene, and trans- β -ocimene. The potential isolate BS1 is identified as the *Serratia liquefaciens* strain BS1.

Keywords: GC-MS, Geraniol, Terpenoid, *Serratia liquefaciens*