

## ABSTRACT

Rahma Kirana Sekarwangi. 24020120140059. **Morphological, Biochemical Characterization, and Flavour Compound Profiling of Yeast Isolates from Nutmeg (*Myristica fragrans*) with Potential for Natural Aroma Production.** Biotechnology Laboratory, Department of Biology, Faculty of Science and Mathematics, Diponegoro University, Semarang, under the guidance of Arina Tri Lunggani and Gunawan Priadi.

Flavor compounds are essential components in the food and cosmetic industries, but their production is currently dominated by environmentally unfriendly synthetic chemical methods. The nutmeg plant (*Myristica fragrans*) is known to be rich in essential oils containing numerous flavor compounds, while yeasts isolated from this plant have the potential to produce natural flavor compounds through biotechnological approaches. This study aimed to characterize the morphology and biochemistry of 28 yeast isolates from the nutmeg plant, identify the flavor compounds produced, and determine the selected yeast species. The methods employed included macroscopic and microscopic morphological observations, as well as biochemical tests using auxanographic methods. Compound analysis was performed using GC-MS and HPLC, followed by molecular identification. The results showed that the yeast isolates had cream-white colonies, round in shape, with convex or raised surfaces and undulating or smooth edges. Microscopic cells were round or oval with asexual reproduction through budding. All isolates were able to assimilate glucose, but their ability to assimilate other carbon sources varied, and they exhibited proteolytic activity. Most isolates demonstrated glucose tolerance up to 50% and ethanol tolerance up to 15%. GC-MS analysis revealed that yeast isolates were capable of transforming citronellal into citronellol, and some could produce isopulegol. GC-MS also confirmed the production of m-cresol and octanoic acid from glucose. HPLC showed glucose consumption followed by ethanol and acetic acid production. Molecular identification revealed that the selected isolates, BM07 and RA06, were *Kodamaea ohmeri*. This research demonstrates the potential of yeasts as biotechnological agents for the production of natural flavor compounds.

*Keywords: Yeast, flavour compound, citronellal, Myristica fragrans, Kodamaea ohmeri.*