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THE APPLICATION OF THE TAMARIND (TAMARINDUS INDICA LINN.) EXTRACT AS A NATURAL PRESERVATIVE FOR THE FRESH BLACK TILAPIA (OREOCHROMIS NILOTICUS LINN.) DURING COLD STORAGE

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ABSTRACT - Tamarind is commonly used as a culinary herb and has been proved to have antimicrobial compounds that can inhibit the growth of pathogenic bacteria. This research aimed to study the potential use of tamarind as a natural preservative for fresh black tilapia. In this research, the selected extracts were obtained from the tamarind flesh which had an inhibition zone about 2.10-14.65 mm against S. aureus, B. cereus, E. aerogenes, P. aeruginosa, S. faecalis and L. monocytogenes. The Minimum Inhibitory Concentration (MIC) used were 3 MIC, 4 MIC, and 5 MIC. The descriptive test has shown that the application of the 5 MIC extract concentration could preserve black tilapia up to five days during cold storage for some parameters, such as the fish flesh, body surface mucus, smell, and texture (based on the microbiological range in fresh fish (SNI)). The test results have shown that the extract of tamarind flesh could inhibit bacterial growth with the effectiveness of 88.73% - 99.64%.

Keywords: Tamarind, Oreochromis niloticus Linn., antimicrobial, pathogenic bacteria

1. INTRODUCTION

As one of the most consumed food products in Indonesia, fish, contain a high composition of protein and water. This causes the fish to be highly perishable by pathogen and decomposing microbes. Sustaining the quality of the fish can be done by keeping them in a storage at a low-temperature and by adding natural preservatives. Tamarind (Tamarindus indica Linn.) is an indigenous plant used as a traditional herb and seasoning that has been proved to have antimicrobial activities and abilities to inhibit pathogenic bacterial growth [7]. The application of the tamarind antimicrobial compounds as food preservatives is likely to be expanded. The tamarind extract can be used as an antimicrobial compound to inhibit the growth of food-decaying bacteria, particularly fish-decaying bacteria of the fresh black tilapia (Oreochromis niloticus Linn.) which has been the main focus of this research.

2. MATERIALS AND METHODS

In this research, the equipments used were as follows: rotary vacuum evaporator, laminar air flow, analytical balance, incubator, autoclave, microscope, vacuum pump, test tube, petri dish, screw test tube, oven, shaker incubator, and refrigerator.

The materials used in this research were the tamarind from the plantations in Surabaya and the black tilapia (Oreochromis niloticus Linn.). The employed microorganisms were S. aureus, B. cereus, E. aerogenes, P. aeruginosa, L. monocytogenes, and S. faecalis, which were obtained from the Central