RINGKASAN

Bakteri asam laktat (BAL) adalah kelompok bakteri Gram positif yang mampu menghasilkan asam laktat, metabolit asam organik, hidrogen peroksida, serta bakteriosin. Bakteriosin merupakan senyawa protein yang memiliki aktivitas antibakteri. Isolat BAL LG-50, LG-107 dan LG-114 yang diisolasi dari sedimen mangrove Pantai Logending dikenali dapat memproduksi bakteriosin. Penelitian ini memiliki tujuan guna mengetahui karakteristik serta identitas isolat BAL LG-50, LG-107, dan LG-114, aktivitas antimikroba bakteriosin isolat BAL LG-50, LG-107, dan LG-114 sebagai agen antimikroba, dan karakteristik fisikokimia bakteriosin isolat BAL LG-50, LG-107, dan LG-114. Karakterisasi isolat BAL dilakukan dengan uji morfologi, uji fisiologis, dan uji biokimiawi. Karakterisasi bakteriosin isolat BAL dilakukan dengan uji aktivitas antimikroba bakteriosin dan uji fisikokimia yang dilakukan dengan uji ninhidrin dan uji bobot molekul bakteriosin menggunakan metode SDS-PAGE.

Penelitian ini dilakukan dengan menerapkan metode survei. Variabel penelitian yakni isolat BAL LG-50, LG-107, dan LG-114. Parameter utama yaitu daya antimikroba bakteriosin dan sifat fisikokimia bakteriosin, sedangkan parameter pendukung yakni sifat morfologi, fisiologis, dan biokimiawi bakteri. Analisis data dengan cara deskriptif serta karakterisasi isolat bakteri berdasarkan *Bergey's Manual of Determinative Bacteriology*.

Hasil penelitian yang didapat yakni isolat BAL LG-50, LG-107, dan LG-114 asal sedimen mangrove Pantai Logending mempunyai karakteristik fenetik serupa dengan genus Lactobacillus. Hasil pengujian aktivitas antimikroba bakteriosin mampu menghambat pertumbuhan *Staphylococcus aureus* serta *Escherichia coli*. Hal ini ditunjukkan oleh terbentuknya zona hambat di sekeliling isolat BAL LG-50, LG-107, dan LG-114. Rata-rata zona hambat bakteriosin isolat BAL LG-50, LG-107, dan LG-114 pada bakteri patogen *S. aureus* dan *E. coli* berturut-turut sebesar 22,17 mm dan 16,67 mm. Hasil uji sifat kimiawi bakteriosin isolat BAL LG-50, LG-107, dan LG-114 menunjukkan apabila bakteriosin yang diproduksi merupakan senyawa protein, dapat dipastikan dengan uji ninhidrin positif. Hasil karakterisasi sifat fisik guna bobot molekul bakteriosin melalui metode SDS-PAGE isolat BAL LG-50, LG-107, dan LG-114 adalah sebesar 38 kDa.

Kata Kunci: *Bakteri asam laktat, bakteriosin, karakterisasi fisikokimia, SDS-PAGE, sedimen mangrove.*

SUMMARY

Lactic acid bacteria (LAB) are a group of gram-positive bacteria that are capable of producing lactic acid, organic acid metabolites, hydrogen peroxide and bacteriocins. Bacteriocins are protein compounds that have antibacterial activity. BAL isolates LG-50, LG-107 and LG-114 which were isolated from mangrove sediments at Logending Beach were known to be able to produce bacteriocins. This study aims to determine the characteristics and identity of LAB isolates LG-50, LG-107, and LG-114, the antimicrobial activity of bacteriocin isolates LAB LG-50, LG-107, and LG-114 as antimicrobial agents, and the physicochemical characteristics of bacteriocin isolates LAB. LG-50, LG-107, and LG-114. Characterizing LAB isolates was carried out by morphological tests, physiological tests, and biochemical tests. Characterization of bacteriocin isolates LAB was carried out by bacteriocin antimicrobial activity test and physicochemical test carried out by ninhydrin test and bacteriocin molecular weight test using the SDS-PAGE method.

This research was conducted using a survey method. The research variables were LAB isolates LG-50, LG-107, and LG-114. The main parameters are the antimicrobial activity of the bacteriocins and the physicochemical properties of the bacteriocins and the supporting parameters are the morphological, physiological and biochemical properties of the bacteria. Descriptive data analysis and characterization of bacterial isolates based on *Bergey's Manual of Determinative Bacteriology.*

The results obtained were LAB isolates LG-50, LG-107, and LG-114 from the mangrove sediments of Logending Beach which had similar phenetic characters to the genus Lactobacillus. The results of the bacteriocin antimicrobial activity test could inhibit the growth of *Staphylococcus aureus* and *Escherichia coli*. This is indicated by the formation of inhibition zones around LAB isolates LG-50, LG-107, and LG-114. The average bacteriocin inhibition zones of BAL isolates LG-50, LG-107, and LG-114 against pathogenic bacteria *S. aureus* and *E. coli* were 22.17 mm and 16.67 mm, respectively. The results of the chemical properties test for the bacteriocins of BAL isolates LG-50, LG-107, and LG-114 showed that the bacteriocins produced were protein compounds, as evidenced by a positive ninhydrin test. The results of the characterization of physical properties for the molecular weight of bacteriocin using the SDS-PAGE method for isolates of BAL LG-50, LG-107, and LG-114 were 38 kDa.

Keywords: *Bacteriocins, lactic acid bacteria, mangrove sediments, physicochemical characterization, SDS-PAGE.*