

**Aktivitas Antibakteri Ekstrak Pigmen Bakteri Hasil Isolasi Dari Limbah
Buah Dan Sayur Terhadap Bakteri *Staphylococcus epidermidis***

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INTISARI

Jerawat diperkirakan menyerang 9,4% dari populasi global dan menduduki peringkat kedelapan di antara penyakit kulit. Produk kecantikan seperti kosmetik dan *skincare* banyak digunakan dalam mengatasi permasalahan kulit seperti jerawat. Salah satu bakteri patogen yang berperan dalam pembentukan jerawat adalah *Staphylococcus epidermidis*. Infeksi dari bakteri ini dapat diatasi menggunakan agen antibakteri yang dihasilkan dari berbagai sumber di alam termasuk dari pigmen yang dihasilkan oleh bakteri. Selain berpotensi sebagai agen antibakteri, pigmen bakteri juga dapat dimanfaatkan sebagai pewarna alami dalam industri kosmetik. Bakteri penghasil pigmen dapat diisolasi dari beragam sumber lingkungan termasuk limbah buah dan sayur. Pigmen yang diproduksi oleh bakteri telah diketahui memiliki aktivitas antioksidan, antikanker, dan antimikrobia. Pigmen alami dari bakteri juga memiliki toksisitas yang rendah dan produktivitas yang stabil. Pada penelitian ini, dilakukan isolasi bakteri penghasil pigmen dari limbah buah dan sayur serta dilakan uji aktivitas antibakteri dari pigmen yang dihasilkan menggunakan metode difusi cakram. Berdasarkan penelitian ini, diketahui pigmen hijau dari isolat bakteri LBS 6, LBS 12, dan LBS 14 memiliki aktivitas antibakteri terhadap *Staphylococcus epidermidis*. Pigmen dari LBS 14 dan LBS 6 memiliki aktivitas antibakteri paling kuat terhadap *Staphylococcus epidermidis* serta diduga mengandung senyawa antibakteri Cyclo(L-prolyl-L-valine). Sementara pigmen dari LBS 12 memiliki aktivitas antibakteri yang lemah hingga sedang terhadap *Staphylococcus epidermidis*. Selain itu, melalui analisis *Two Way ANOVA* diketahui bahwa ada pengaruh signifikan pada penggunaan pigmen dari isolat bakteri yang berbeda dan variasi konsentrasi terhadap diameter zona hambat serta interaksi antara keduanya.

KATA KUNCI: Antibakteri, Limbah Buah dan Sayur, Pigmen, *Staphylococcus epidermidis*

Antibacterial Activity of Bacterial Pigment Extracts Isolated from Fruit and Vegetable Waste Against *Staphylococcus epidermidis*

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ABSTRACT

Acne affects an estimated 9.4% of the global population and is ranked eighth among skin diseases. Beauty products such as cosmetics and skincare are widely used in treating skin problems such as acne. One of the pathogenic bacteria that plays a role in acne formation is *Staphylococcus epidermidis*. Infection from these bacteria can be treated using antibacterial agents produced from various sources in nature including from pigments produced by bacteria. Apart from its potential as an antibacterial agent, bacterial pigments can also be utilized as natural colorants in the cosmetics industry. Pigment-producing bacteria can be isolated from a variety of environmental sources including fruit and vegetable waste. Pigments produced by bacteria have been known to have antioxidant, anticancer, and antimicrobial activities. Natural pigments from bacteria also have low toxicity and stable productivity. In this study, isolation of pigment-producing bacteria from fruit and vegetable waste was carried out and antibacterial activity of the pigments produced using the disc diffusion method was tested. Based on this study, it is known that green pigments from bacterial isolates LBS 6, LBS 12, and LBS 14 have antibacterial activity against *Staphylococcus epidermidis*. Pigments from LBS 14 and LBS 6 have the strongest antibacterial activity against *Staphylococcus epidermidis* and are thought to contain the antibacterial compound Cyclo(L-prolyl-L-valine). While pigments from LBS 12 had weak to moderate antibacterial activity against *Staphylococcus epidermidis*. In addition, through Two Way ANOVA analysis, it is known that there is a significant effect on the use of pigments from different bacterial isolates and variations in concentration on the diameter of the inhibition zone and the interaction between the two.

KEYWORDS: Antibacterial, Fruit and Vegetable Waste, Pigment, *Staphylococcus epidermidis*