

ABSTRAK

Acne vulgaris merupakan kelainan kulit yang sangat umum dijumpai, dengan *Cutibacterium acnes* dan *Staphylococcus aureus* sebagai bakteri utama penyebabnya. Penggunaan antibiotik jangka panjang dalam terapinya berisiko memicu resistensi antimikroba, sehingga diperlukan alternatif yang lebih aman. Penelitian ini bertujuan untuk mengetahui aktivitas antibakteri metabiotik hasil fermentasi nanas (*Ananas comosus* L.) pada tepache dan kombucha terhadap kedua bakteri tersebut, serta membandingkan pengaruh variasi konsentrasi sari buah nanas terhadap aktivitas yang dihasilkan. Penelitian menggunakan rancangan *true experimental post-test only control group design*. Tepache dan kombucha difermentasi selama lima hari dengan tiga variasi konsentrasi sari buah nanas yaitu 10, 20, dan 30 persen. Metabiotik diperoleh melalui filtrasi membran 0,22 mikrometer. Aktivitas antibakteri diuji menggunakan metode difusi cakram dan dianalisis dengan uji One Way ANOVA dilanjutkan uji post hoc. Seluruh formula metabiotik mampu menghambat pertumbuhan kedua bakteri uji. Aktivitas tertinggi dicapai oleh Tepache formula 3 (30%) dengan diameter zona hambat $13,97 \pm 0,30$ mm terhadap *Staphylococcus aureus* dan $11,11 \pm 0,23$ mm terhadap *Cutibacterium acnes*, dikategorikan kuat. Peningkatan konsentrasi sari buah nanas berbanding lurus dengan peningkatan aktivitas antibakteri. Metabiotik tepache secara konsisten menunjukkan daya hambat lebih tinggi dibandingkan kombucha. Seluruh perbedaan antar kelompok bermakna secara statistik ($p < 0,05$). Metabiotik fermentasi nanas berpotensi dikembangkan sebagai agen antibakteri alami untuk penanganan *acne vulgaris*.

Kata kunci: *acne vulgaris*, metabiotik, nanas, tepache, kombucha, antibakteri.

ABSTRACT

Acne vulgaris is one of the most prevalent skin disorders, with *Cutibacterium acnes* and *Staphylococcus aureus* as its primary causative bacteria. Long-term antibiotic therapy carries the risk of inducing antimicrobial resistance, highlighting the need for safer alternatives. This study aimed to evaluate the antibacterial activity of metabiotics derived from pineapple (*Ananas comosus* L.) fermentation in tepache and kombucha against both bacteria, as well as to compare the effect of varying pineapple juice concentrations on the resulting activity. A true experimental design with a post-test only control group approach was employed. Tepache and kombucha were fermented for five days using three pineapple juice concentration variations of 10, 20, and 30 percent. Metabiotics were obtained through 0.22-micrometer membrane filtration. Antibacterial activity was assessed using the disc diffusion method and analyzed by One-Way ANOVA followed by post hoc tests. All metabiotic formulas inhibited the growth of both test bacteria. The highest activity was achieved by Tepache formula 3 (30%), with inhibition zone diameters of 13.97 ± 0.30 mm against *Staphylococcus aureus* and 11.11 ± 0.23 mm against *Cutibacterium acnes*, both categorized as strong. Higher pineapple juice concentrations consistently correlated with greater antibacterial activity. Tepache metabiotics demonstrated stronger inhibitory effects than kombucha across all concentrations. All differences between treatment groups were statistically significant ($p < 0.05$). These findings suggest that pineapple fermentation-derived metabiotics hold potential for further development as a natural antibacterial agent in the management of *acne vulgaris*.

Keywords: *acne vulgaris*, metabiotics, pineapple, tepache, kombucha, antibacterial.