ABSTRAK

EFEKTIVITAS PASTA GIGI NANO-HIDROKSIAPATIT CANGKANG KEONG SAWAH KOMBINASI EKSTRAK DAUN KEMANGI TERHADAP BAKTERI *Lactobacillus acidophilus*

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Latar Belakang karies gigi merupakan masalah kesehatan gigi dan mulut dengan prevalensi tinggi. Salah satu bakteri penyebab karies gigi adalah *Lactobacillus acidophilus*. Penelitian ini bertujuan untuk mengetahui efektivitas pasta gigi nano-hidroksiapatit yang disintesis dari cangkang keong sawah dan dikombinasikan dengan ekstrak daun kemangi terhadap pertumbuhan *Lactobacillus acidophilus*. **Metode** penelitian eksperimental laboratoris *in vitro* ini menggunakan metode difusi sumuran dengan kelompok perlakuan berupa pasta gigi ekstrak daun kemangi 5% (P1), pasta gigi nano-hidroksiapatit 10% (P2), pasta gigi nano hidroksiapatit cangkang keong sawah 10% kombinasi ekstrak daun kemangi 5% (P3), pasta gigi komersial berfluoride sebagai kontrol positif (KP), dan akuades steril sebagai kontrol negativ (KN). Parameter penelitian berupa diameter zona hambat pertumbuhan bakteri dianalisis menggunakan uji Kruskal Wallis dan dilanjutkan dengan Post Hoc Mann Whitney. **Hasil** penelitian menunjukkan bahwa diameter zona hambat paling tinggi terdapat pada kelompok P3 dengan zona hambat sebesar 19,08 mm dan termasuk kategori kuat, diikuti oleh P1, KP, P2, dan KN. Hasil analisis statistik menunjukkan terdapat perbedaan signifikan antara kelompok P1 dengan kelompok P2, P3, KP, dan KN. **Simpulan** formulasi pasta gigi nano-hidroksiapatit cangkang keong sawah 10% kombinasi ekstrak daun kemangi 5% berpotensi mencegah pertumbuhan bakteri *Lactobacillus acidophilus* dalam pencegahan karies gigi.

Kata kunci: antibakteri, cangkang keong sawah, ekstrak daun kemangi *Lactobacillus acidophilus*, nano-hidroksiapatit.

ABSTRACT

EFFECTIVENESS OF NANO-HYDROXYAPATITE TOOTHPASTE DERIVED FROM RICE SNAIL SHELLS COMBINED WITH BASIL LEAF EXTRACT AGAINST Lactobacillus acidophilus

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Background *dental caries remains a major oral health problem with a high prevalence. One of the bacteria that causes dental caries is Lactobacillus acidophilus. This study aimed to determine the effectiveness of toothpaste containing nano-hydroxyapatite synthesized from rice field snail shells combined with basil leaf extract against the growth of Lactobacillus acidophilus.* ***Methods*** *this in vitro experimental laboratory study used the agar well diffusion method with treatment groups consisting of toothpaste containing 5% basil leaf extract (P1), toothpaste containing 10% nano-hydroxyapatite (P2), toothpaste containing 10% nano-hydroxyapatite from rice field snail shells combined with 5% basil leaf extract (P3), commercial fluoride toothpaste as a positive control (KP), and sterile distilled water as a negative control (KN). The research parameter was the diameter of the bacterial growth inhibition zone, which was analyzed using the Kruskal–Wallis test followed by the Post Hoc Mann–Whitney test.* ***Result*** *showed that the highest inhibition zone diameter was found in the P3 group with an inhibition zone of 19.08 mm and classified as strong, followed by P1, KP, P2, and KN. Statistical analysis showed a significant difference between the P1 group and the P2, P3, PC, and NC groups.* ***Conclusion*** *the formulation of toothpaste containing 10% nano-hydroxyapatite from rice field snail shells combined with 5% basil leaf extract has the potential to inhibit the growth of Lactobacillus acidophilus in the prevention of dental caries.*

Keywords: *antibacterial, rice snail shells, basil leaf extract, Lactobacillus acidophilus, nano-hydroxyapatite.*