

INTISARI

Latar Belakang: Lesi periapikal merupakan manifestasi inflamasi kronis yang umumnya terjadi akibat infeksi bakteri dari pulpa gigi nekrotik dan ditandai dengan peningkatan ekspresi enzim proinflamasi salah satunya Matriks Metalloproteinase-8 (MMP-8). *Triple Antibiotic Paste* (TAP) telah lama menjadi standar terapi medikamen intrakanal, namun memiliki sejumlah kekurangan seperti risiko diskolorasi gigi dan resistensi antibiotik sehingga diperlukan medikamen alternatif yang efektif dan aman. **Tujuan:** Penelitian ini bertujuan untuk mengkaji pengaruh aplikasi gel ekstrak bawang putih (*Allium sativum* L.) konsentrasi 20% terhadap ekspresi MMP-8 pada lesi periapikal gigi pada model hewan coba tikus *Sprague Dawley*. **Metode:** Penelitian ini menggunakan desain eksperimen laboratorium dengan *post-test only control group design*. Tikus dibagi menjadi sembilan kelompok berdasarkan jenis perlakuan (kontrol negatif, gel ekstrak bawang putih 20%, dan TAP) dan waktu paparan (hari ke-5, 7, dan 14). Ekspresi MMP-8 diamati menggunakan metode imunohistokimia dan dianalisis secara statistik menggunakan *Two-Way ANOVA* dan uji *post-hoc* LSD dengan tingkat kepercayaan 95%. **Hasil:** Hasil rerata ekspresi MMP-8 paling rendah ditemukan pada kontrol positif pada hari ke-14 (0%), diikuti GEBP 20% pada hari ke-14 ($2.00\% \pm 1.00$). Persentase ekspresi MMP-8 tertinggi ditemukan pada kontrol negatif pada hari ke-5 ($63.33\% \pm 4.16$). Terdapat perbedaan bermakna antar kelompok perlakuan dan lama paparan terhadap ekspresi MMP-8. **Kesimpulan:** Gel ekstrak bawang putih konsentrasi 20% pada lama paparan 5, 7, dan 14 hari dapat menekan ekspresi MMP-8 pada lesi periapikal gigi tikus *Sprague Dawley*.

Kata kunci: Antiinflamasi, gel ekstrak bawang putih, lesi periapikal, LSTR, MMP-8, TAP

ABSTRACT

Background: Periapical lesions are manifestations of chronic inflammation commonly caused by bacterial infection originating from necrotic dental pulp, characterized by increased expression of proinflammatory enzymes such as Matrix Metalloproteinase-8 (MMP-8). Triple Antibiotic Paste (TAP) has long been the standard intracanal medicament therapy, but it presents several drawbacks, including the risk of tooth discoloration and antibiotic resistance. Therefore, there is a need for alternative medicaments that are both effective and safe. **Objective:** This study aimed to analyze the effect of 20% garlic (*Allium sativum* L.) extract gel application on the expression of MMP-8 in periapical lesions of *Sprague Dawley* rats. **Methods:** A laboratory experimental study was conducted using a post-test only control group design. Rats were divided into nine groups based on treatment type (negative control, 20% garlic extract gel, and TAP) and exposure duration (day 5, 7, and 14). MMP-8 expression was evaluated using the immunohistochemistry method and statistically analyzed using Two-Way ANOVA and post-hoc LSD test with a 95% confidence level. **Results:** The lowest mean MMP-8 expression was observed in the positive control group on day 14 (0%), followed by the 20% garlic extract gel group on day 14 ($2.00\% \pm 1.00$). The highest MMP-8 expression was found in the negative control group on day 5 ($63.33\% \pm 4.16$). There were statistically significant differences in MMP-8 expression between treatment groups and exposure durations. **Conclusion:** The 20% garlic extract gel was effective in reducing MMP-8 expression in periapical lesions of *Sprague Dawley* rats after 5, 7, and 14 days of exposure.

Keywords: anti-inflammatory, garlic extract gel, LSTR, MMP-8, periapical lesion, TAP