

ABSTRACT

Traumatic ulcer is a common oral mucosal lesion caused by mechanical, chemical, or thermal trauma. It is characterized by the loss of the epithelial layer reaching the lamina propria and is accompanied by inflammation, which is indicated by increased levels of Tumor Necrosis Factor- α (TNF- α). A decrease in TNF- α levels indicates the reduction of inflammation and the progression of wound healing. Papaya leaves (*Carica papaya L.*) contain bioactive compounds such as flavonoids, alkaloids, saponins, tannins, terpenoids, and the papain enzyme, which have anti-inflammatory, antioxidant, and antimicrobial activities. A mucoadhesive patch is a topical drug delivery system designed to adhere to the oral mucosa, protect the lesion, and release active compounds in a controlled manner. The aim of this study was to evaluate the effectiveness of a mucoadhesive patch containing papaya leaf extract on TNF- α levels in traumatic ulcers of the oral mucosa in Wistar rats (*Rattus norvegicus*). This study used a *true experimental in vivo* laboratory design with a post-test only control group approach. The subjects were divided into a negative control group, a positive control group treated with 0.1% *triamcinolone acetonide*, and a treatment group treated with a mucoadhesive patch containing 1% papaya leaf extract. Observations were conducted on day 3 and day 7. TNF- α levels were measured using ELISA method, and absorbance was read using a spectrophotometer at a wavelength of 450 nm. The results showed a significant difference in TNF- α levels among the negative control group, the positive control group, and the treatment group ($p < 0.05$). The study concludes that a mucoadhesive patch containing 1% papaya leaf extract (*Carica papaya L.*) is effective in reducing TNF- α levels in traumatic ulcers of the oral mucosa in Wistar rats (*Rattus norvegicus*) compared to the negative control group.

Keywords: *Carica papaya L.*, mucoadhesive patch, wound healing, Tumor Necrosis Factor- α (TNF- α), traumatic ulcer.

UNMAS DENPASAR

ABSTRAK

Ulkus traumatikus merupakan lesi mukosa oral yang sering terjadi akibat trauma mekanis, kimia, atau termal, ditandai dengan hilangnya lapisan epitel hingga mencapai lamina propria serta disertai proses inflamasi yang ditunjukkan oleh peningkatan kadar Tumor Necrosis Factor- α (TNF- α). Penurunan kadar TNF- α mencerminkan meredanya inflamasi dan berlangsungnya proses penyembuhan luka. Daun pepaya (*Carica papaya L.*) mengandung senyawa bioaktif seperti flavonoid, alkaloid, saponin, tanin, terpenoid, serta enzim papain yang memiliki aktivitas antiinflamasi, antioksidan, dan antimikroba. *Patch* mukoadhesif merupakan sistem penghantaran obat topikal yang dirancang untuk melekat pada mukosa oral, melindungi lesi, serta melepaskan zat aktif secara terkontrol. Tujuan penelitian ini untuk mengetahui efektivitas *patch* mukoadhesif ekstrak daun pepaya terhadap kadar TNF- α pada ulkus traumatikus mukosa oral tikus Wistar (*Rattus norvegicus*). Rancangan penelitian ini menggunakan *true experimental* laboratorium secara *in vivo* dengan pendekatan *post-test only control group*. Subjek penelitian dibagi menjadi kelompok kontrol negatif, kelompok kontrol positif yang diberi *triamcinolone acetonide* 0,1%, serta kelompok perlakuan yang diberi *patch* mukoadhesif ekstrak daun pepaya konsentrasi 1%, dengan pengamatan pada hari ke-3 dan ke-7. Pengukuran kadar TNF- α dilakukan dengan metode ELISA dan pembacaan absorbansi menggunakan spektrofotometer pada panjang gelombang 450 nm. Hasil penelitian menunjukkan adanya perbedaan signifikan antara kelompok kontrol positif, kontrol negatif dan kelompok perlakuan pemberian *patch* mukoadhesif ekstrak daun pepaya konsentrasi 1 % terhadap kadar TNF- α ($p < 0,05$). Kesimpulan penelitian ini adalah bahwa *patch* mukoadhesif ekstrak daun pepaya (*Carica papaya L.*) konsentrasi 1% efektif dalam menurunkan kadar TNF- α pada ulkus traumatikus mukosa oral tikus Wistar (*Rattus norvegicus*) dibandingkan dengan kelompok kontrol negatif.

Kata kunci: *Carica papaya L.*, *patch* mukoadhesif, penyembuhan luka, Tumor Necrosis Factor- α (TNF- α), ulkus traumatikus.

UNMAS DENPASAR