

## ABSTRAK

Buah pepaya (*Carica papaya* L.) mengandung enzim papain yang dapat membantu menghilangkan noda pada gigi dengan cara memecah lapisan protein yang menempel pada permukaan enamel. Berbeda dengan bahan pemutih gigi kimia seperti hidrogen peroksida yang dapat merusak enamel, papain bekerja lebih lembut dan aman. Penelitian ini bertujuan membuat *patch* gigi berbahan buah pepaya serta menguji pengaruhnya terhadap tingkat kecerahan gigi dan risiko kerusakan enamel. Penelitian dilakukan secara eksperimen di laboratorium menggunakan gigi premolar manusia yang sebelumnya direndam dengan larutan teh hijau. *Patch* dibuat dalam tiga formula berbeda, yaitu F1 pepaya (55%) , F2 pepaya(60%), dan F3 pepaya (65%), dengan HPMC dan PVP sebagai pembentuk *patch*, serta gliserin sebagai pelembut. Sebagai pembanding digunakan *patch* yang mengandung 30% hidrogen peroksida (control negatif) dan gigi tanpa perlakuan. Tingkat kecerahan gigi diukur dengan *Vitapan Classical shade guide*, sedangkan kerusakan enamel diamati menggunakan mikroskop elektron (SEM). Hasilnya, semua formula *patch* pepaya mampu membuat gigi lebih cerah secara signifikan dibandingkan kontrol negatif, dengan hasil terbaik pada F2 (60% pepaya). Uji SEM menunjukkan bahwa *patch* pepaya hanya menimbulkan kerusakan enamel yang sangat kecil, jauh lebih rendah dibandingkan *patch* hidrogen peroksida. Nilai pH *patch* pepaya berkisar 6,87–6,94 (netral), sehingga aman terhadap enamel gigi.

**Kata kunci:** (*Carica papaya* L.), *patch* gigi, papain, *dental bleaching*, erosititas.



KARAWANG

## ABSTRACT

*Papaya fruit (Carica papaya L.) contains the enzyme papain, which can help remove stains on teeth by breaking down the protein layer attached to the enamel surface. Unlike chemical tooth-whitening agents such as hydrogen peroxide, which can damage enamel, papain works more gently and safely. This study aimed to formulate a papaya-based dental patch and examine its effects on tooth brightness and the risk of enamel damage. The research was conducted experimentally in a laboratory using extracted human premolar teeth that had been previously soaked in green tea solution. The patches were prepared in three different formulas: F1 (55% papaya), F2 (60% papaya), and F3 (65% papaya), with HPMC and PVP as the patch-forming agents and glycerin as a plasticizer. For comparison, a patch containing 30% hydrogen peroxide (negative control) and untreated teeth were used. Tooth brightness was measured using the Vitapan Classical shade guide, while enamel damage was observed under a scanning electron microscope (SEM). The results showed that all papaya patch formulas significantly increased tooth brightness compared to the negative control, with the best outcome obtained from F2 (60% papaya). SEM analysis indicated that papaya patches caused minimal enamel damage, far less than that caused by hydrogen peroxide patches. The pH values of the papaya patches ranged from 6.87 to 6.94 (neutral), making them safe for tooth enamel.*

**Keywords:** *Carica papaya L., dental patch, papain, tooth whitening, erosivity.*