

ABSTRAK

Latar belakang: Paparan gelombang elektromagnetik (EMF) dapat menginduksi stres oksidatif yang menyebabkan kerusakan ginjal, terutama pada kondisi rentan seperti kehamilan. Kaktus centong (*Opuntia cochenillifera*) diketahui memiliki kandungan antioksidan tinggi yang berpotensi sebagai agen protektif. **Tujuan:** Menganalisis efek protektif kaktus centong dalam sediaan mentah dan *powder* terhadap gambaran histopatologi ginjal mencit hamil yang terpapar gelombang elektromagnetik. **Metode:** Penelitian ini merupakan penelitian eksperimental dengan rancangan *post-test only control group design*. Sampel mencit hamil dibagi menjadi kelompok kontrol negatif, kontrol positif (paparan EMF), perlakuan 1 (EMF + kaktus mentah), dan perlakuan 2 (EMF + kaktus *powder*). Kerusakan tubulus ginjal dinilai secara histopatologis. **Hasil:** Terdapat kerusakan ginjal yang signifikan pada kelompok yang terpapar EMF dibandingkan kontrol ($p < 0,05$). Pemberian kaktus centong sediaan mentah maupun *powder* secara signifikan mengurangi tingkat kerusakan tubulus ginjal. Tidak ditemukan perbedaan bermakna antara efektivitas sediaan mentah dan *powder* ($p > 0,05$), meskipun rerata skor kerusakan pada kelompok *powder* lebih rendah. **Kesimpulan:** Pemberian kaktus centong dalam bentuk mentah maupun *powder* efektif dalam memberikan proteksi terhadap kerusakan histopatologi ginjal mencit hamil yang dipapar gelombang elektromagnetik.

Kata kunci: Kaktus centong, *Opuntia cochenillifera*, gelombang elektromagnetik, histopatologi ginjal, stres oksidatif, mencit hamil.

ABSTRACT

Background: Exposure to electromagnetic fields (EMF) can induce oxidative stress, leading to kidney damage, especially in vulnerable conditions such as pregnancy. Prickly pear cactus (*Opuntia cochenillifera*) is known for its high antioxidant content, showing potential as a protective agent. **Objectives:** To analyze the protective effect of prickly pear cactus in raw and powder forms on the renal histopathology of pregnant mice exposed to electromagnetic waves. **Methods:** This was an experimental study with a post-test-only control group design. Pregnant mice were divided into a negative control group, a positive control group (EMF exposure), treatment group 1 (EMF + raw cactus), and treatment group 2 (EMF + powder cactus). Renal tubular damage was assessed histopathologically. **Results:** Significant kidney damage was observed in the EMF-exposed group compared to the control ($p < 0.05$). Administration of both raw and powder forms of prickly pear cactus significantly reduced the level of renal tubular damage. No significant difference was found between the effectiveness of the raw and powder forms ($p > 0.05$), although the mean damage score was lower in the powder group. **Conclusions:** The administration of prickly pear cactus, in both raw and powder forms, is effective in providing protection against renal histopathological damage in pregnant mice exposed to electromagnetic waves.

Keywords: Prickly pear, *Opuntia cochenillifera*, electromagnetic waves, renal histopathology, oxidative stress, pregnant mice.