

Jelita Ayu Puspitasari. NPM 210331100023. Pengaruh Tegangan *Pulsed Electric Field* (PEF) *Pretreatment* Pada Ekstraksi Daun Pakis Kinca (*Nephrolepis cordifolia* (L.) C. Presl). Di bawah Bimbingan Dr. Askur Rahman, S.TP., M.P. dan Hamzah Fansuri, S.ST., M.T.

ABSTRAK

Pakis Kinca salah satu tanaman herbal yang mengandung senyawa kimia, seperti tannin, saponin, alkaloid, flavonoid, total fenol, serta memiliki nilai antioksidan IC_{50} . Penelitian ini bertujuan untuk mengetahui pengaruh variasi tegangan pada *Pulsed Electric Field* (PEF) *pretreatment* terhadap rendemen, total flavonoid, dan aktivitas antioksidan dari ekstrak daun pakis kinca (*Nephrolepis cordifolia* (L.) C. Presl). Metode ekstraksi yang digunakan adalah maserasi, dengan perlakuan tegangan PEF 0 V, 4000 V, 6000 V, dan 8000 V, dengan frekuensi 3000 Hz, selama 480 detik. Parameter yang diamati yaitu rendemen, total flavonoid *count* (TFC), aktivitas antioksidan (IC_{50}), serta analisis morfologi sel menggunakan *Scanning Electron Microscopy* (SEM). Hasil penelitian menunjukkan bahwa variasi tegangan PEF tidak berpengaruh nyata terhadap rendemen dan aktivitas antioksidan, namun berpengaruh nyata terhadap kandungan total flavonoid. Nilai rendemen tertinggi diperoleh pada perlakuan 6000 V sebesar 18,98%, kadar total flavonoid tertinggi diperoleh pada perlakuan 8000 V sebesar 80,85 mg QE/g ekstrak, dan nilai IC_{50} terendah (aktivitas antioksidan tertinggi) sebesar 108,10 ppm pada perlakuan kontrol (tanpa PEF). Analisis SEM menunjukkan adanya perubahan morfologi dinding sel akibat PEF, namun bersifat *reversible*. Dengan demikian, *pretreatment* PEF berpotensi meningkatkan kandungan flavonoid tanpa merusak struktur sel secara permanen.

Kata Kunci : Antioksidan, Pakis kinca, *Pulsed Electric Field*, Total Flavonoid, SEM.

Jelita Ayu Puspitasari. NPM 210331100023. *The Effect of Pulsed Electric Field (PEF) Pretreatment on the Extraction of Kinca Fern Leaves (Nephrolepis cordifolia (L) C. Presl)*. Di bawah Bimbingan Dr. Askur Rahman, S.TP., M.P. dan Hamzah Fansuri, S.ST., M.T.

ABSTRACT

Kinca Fern Leaves is one of the herbal plants that contains chemical compounds, such as tannins, saponins, alkaloids, flavonoids, total phenols, and has antioxidant IC₅₀ values. This study aims to investigate the effect of varying voltages in Pulsed Electric Field (PEF) pretreatment on yield, total flavonoids, and antioxidant activity of the stem extract of Kinca Fern Leaves (Nephrolepis cordifolia (L.) C. Presl). The extraction method used was maceration, with PEF voltage treatments of 0 V, 4000 V, 6000 V, and 8000 V, at a frequency of 3000 Hz, for 480 seconds. The parameters observed were yield, total flavonoid count (TFC), antioxidant activity (IC₅₀), and cell morphology analysis using Scanning Electron Microscopy (SEM). The results showed that variations in PEF voltage did not significantly affect yield and antioxidant activity but significantly affected total flavonoid content. The highest yield was obtained at 6000 V (18.98%), the highest total flavonoid content was obtained at 8000 V (80.85 mg QE/g extract), and the lowest IC₅₀ value (highest antioxidant activity) was 108.10 ppm in the treatment without PEF. SEM analysis showed changes in cell wall morphology due to PEF, but these changes were reversible. Thus, PEF pretreatment has the potential to increase flavonoid content without permanently damaging cell structure.

Keyword : Antioxidant, *Nephrolepis cordifolia*, Pulsed Electric Field, Total Flavonoid Content, SEM.