

Analisis Kadar Fe Organ Paru Tikus Model Besi Berlebih setelah Pemberian Kombinasi Deferiprone dan Ekstrak Etanol Buah Mahkota Dewa = Analysis of Iron Levels in Lungs of Iron-Overloaded Rats After Combined Deferiprone and Mahkota Dewa Extract Treatment

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Abstrak

Pendahuluan: Akumulasi zat besi berlebih, terutama pada pasien thalassemia yang menerima transfusi darah rutin, dapat memicu penyakit pernapasan seperti PPOK melalui pembentukan radikal bebas. Meskipun kelator besi seperti deferiprone efektif, deferiprone memiliki efek samping seperti neutropenia dan agranulositosis. *Phaleria macrocarpa* diketahui juga mengandung mangiferin yang bersifat antioksidan dan antiinflamasi. Tujuan penelitian ini untuk mengetahui efektivitas terapi kombinasi deferiprone dan ekstrak etanol *P. macrocarpa* sebagai alternatif untuk mengobati kondisi kelebihan zat besi dengan efek samping yang lebih rendah. Metode: Penelitian menggunakan tikus Sprague-Dawley (200-250 g) yang dibagi menjadi enam kelompok: Normal (N), Kontrol Negatif (KN), Deferiprone (D), *Phaleria macrocarpa* (PM), Kombinasi Dosis Penuh (DPM-1), dan Kombinasi Setengah Dosis (DPM-2). Tikus diinjeksi iron dextran 15 mg/x selama 8 minggu. Kelompok perlakuan menerima ekstrak etanol *Phaleria macrocarpa* (100 mg/kgBB) selama 4 minggu, sedangkan deferiprone diberikan dalam dosis penuh (462,5 mg/kgBB) atau setengah dosis (231,2 mg/kgBB) selama 4 minggu. Kadar zat besi dalam jaringan paru diukur menggunakan Atomic Absorption Spectrometry (AAS). Hasil: Kelompok PM menunjukkan penurunan kadar besi paling rendah di paru dibandingkan KN. Uji normalitas Shapiro-Wilk menunjukkan data terdistribusi normal ($p>0,05$). Uji One Way Anova tidak menemukan perbedaan signifikan antar kelompok ($p>0,05$), sehingga uji post hoc tidak dilakukan. Kesimpulan: Pemberian terapi deferiprone dan ekstrak *Phaleria macrocarpa* secara kombinasi tidak menunjukkan perbedaan yang signifikan dalam penurunan kadar besi di paru secara statistik. Namun, data menunjukkan kadar besi mengalami penurunan walaupun tidak signifikan pada kelompok PM dan DPM2.

.....Introduction: Excessive iron accumulation, particularly in thalassemia patients who undergo regular blood transfusions, can lead to respiratory diseases like COPD, through free radical formation. Although iron chelators such as deferiprone are effective, they may cause side effects including neutropenia and agranulocytosis. *Phaleria macrocarpa*, containing mangiferin, has known antioxidant and anti-inflammatory properties. The study aims to evaluate the effectiveness of combining deferiprone with *Phaleria macrocarpa* extract for treating iron overload with fewer side effects. Methods: Sprague-Dawley rats (200–250 g) were divided into six groups: Normal (N), Negative Control (KN), Deferiprone (D), *Phaleria macrocarpa* (PM), Full-Dose Combination (DPM-1), and Half-Dose Combination (DPM-2). The rats were injected with 15 mg/x iron dextran for 8 weeks to induce iron overload. The treatment groups received ethanol extract of *Phaleria macrocarpa* (100 mg/kg body weight) for 4 weeks, while deferiprone was given at full dose (462.5 mg/kg body weight) or half dose (231.2 mg/kg body weight) for 4 weeks. Iron levels in lung tissues were measured using Atomic Absorption Spectrometry (AAS). Results: The PM group showed the lowest reduction in lung iron levels compared to KN. The Shapiro-Wilk test confirmed that the data were normally distributed ($p>0.05$). One-way Anova revealed no significant differences between groups ($p>0.05$), so post

hoc tests weren't conducted. Conclusion: Although the combination of deferiprone and Phaleria macrocarpa extract did not significantly reduce lung iron levels, The data showed that iron levels decreased, although not significantly, in the PM and DPM2 groups.