FORMULASI DAN UJI EVALUASI SEDIAAN *Self-Nanoemulsifying Drug Delivery System* (SNEDDS) DARI EKSTRAK METANOL AKAR PANDAN LAUT (*Pandanus Odorifer*)

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ABSTRAK

Pandanus odorifer (pandan laut) mengandung flavonoid, saponin, dan alkaloid yang berpotensi sebagai antibakteri dan antidiabetes, namun kelarutan rendah dan bioavailabilitas terbatas menjadi kendala pemanfaatannya. Penelitian ini bertujuan mengembangkan dan mengevaluasi *Self-Nanoemulsifying Drug Delivery System* (SNEDDS) ekstrak metanol akar pandan laut untuk meningkatkan kelarutan dan stabilitas sediaan. Ekstraksi dilakukan dengan metode sokletasi, kemudian diformulasikan enam variasi SNEDDS menggunakan Tween 20, Tween 80, PEG 400, dan propilen glikol. Formula terbaik dipilih melalui uji organoleptik dan *creaming test*, lalu dievaluasi meliputi kelarutan, ukuran droplet menggunakan *Particle Size Analyzer*, pH, viskositas, homogenitas, kecepatan emulsifikasi, serta stabilitas melalui uji *freeze-thaw* dan sentrifugasi. Hasil menunjukkan Formula 3 (Tween 80 21,4% + PEG 400 21,4%) memiliki ukuran droplet 530 nm, pH 6,91 ± 0,04, viskositas 253,33 ± 11,55 cPs, serta stabil pada uji *freeze-thaw* dan sentrifugasi. Kesimpulannya, SNEDDS Formula 3 mampu meningkatkan kelarutan dan kestabilan fisik ekstrak, sehingga berpotensi dikembangkan sebagai sediaan herbal dengan efektivitas penghantaran zat aktif yang lebih optimal.

Kata kunci: *Pandanus odorifer*, SNEDDS, nanoemulsi, kelarutan, stabilitas

FORMULATION AND EVALUATION OF SELF-NANOEMULSIFYING DRUG DELIVERY SYSTEM (SNEDDS) FROM METHANOL EXTRACT OF PANDANUS ODORIFER ROOT

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ABSTRACT

Pandanus odorifer contains bioactive compounds such as flavonoids, saponins, and alkaloids with potential antibacterial and antidiabetic activities; however, its utilization is limited by low solubility and poor bioavailability. This study aimed to develop and evaluate a Self-Nanoemulsifying Drug Delivery System (SNEDDS) of Pandanus odorifer root methanol extract to improve solubility and formulation stability. The extract was obtained using Soxhlet extraction, followed by the formulation of six SNEDDS variations composed of Tween 20, Tween 80, PEG 400, and propylene glycol. The optimal formula was selected based on organoleptic and creaming tests, then evaluated for solubility, droplet size using a Particle Size Analyzer, pH, viscosity, homogeneity, emulsification time, and stability through freeze–thaw and centrifugation tests. Results showed that Formula 3 (Tween 80 21.4% + PEG 400 21.4%) had a droplet size of 530 nm, pH 6.91 ± 0.04, viscosity 253.33 ± 11.55 cPs, and remained stable in freeze–thaw and centrifugation tests. In conclusion, SNEDDS Formula 3 enhanced the solubility and physical stability of the extract, demonstrating potential for development as an herbal dosage form with improved active compound delivery efficiency.

Keywords: Pandanus odorifer, SNEDDS, nanoemulsion, solubility, stability

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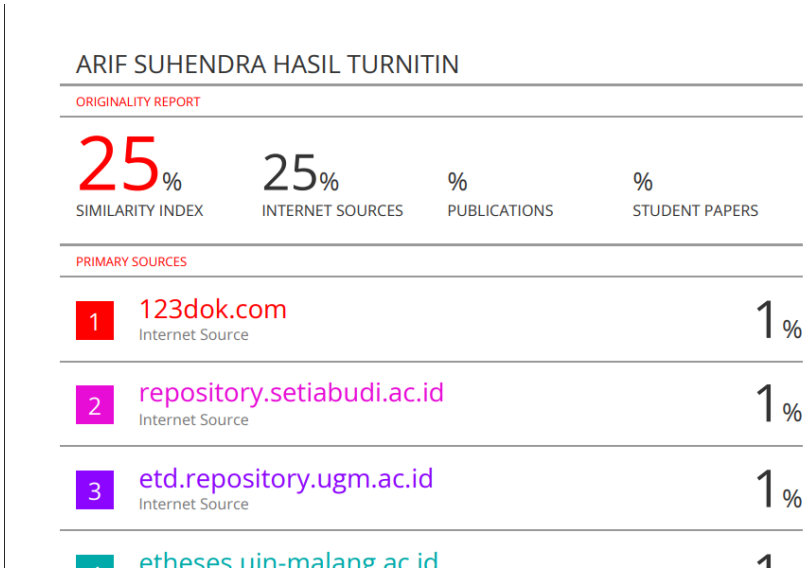

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