INTISARI

Banyaknya obat pereda nyeri yang tersebar di pasaran, sayangnya masih diikuti dengan adanya efek samping yang membahayakan organ-organ vital seperti hepar dan jantung. Senyawa analog kurkumin, Pentagamavunon-0 (PGV-0) ditemukan memiliki potensi untuk dikembangkan sebagai agen obat baru dikarenakan sifatnya yang lebih aman. Akan tetapi, bioavailabilitasnya yang buruk menjadi penghalang sehingga dilakukan modifikasi pada PGV-0 melalui sistem penghantaran obat dengan formulasi sebagai *Self-nanoemulsifying Drug Delivery System* (SNEDDS).

Aktivitas PGV-0 SNEDDS sebagai analgesik diuji dengan metode geliat menggunakan hewan uji mencit betina galur BALB/c yang diinduksi nyeri dengan asam asetat 300 mg/kgBB secara intraperitoneal. Sejumlah 30 ekor mencit uji dibagi ke dalam 6 kelompok perlakuan (setiap kelompok 5 ekor) yaitu kontrol positif (parasetamol 113,75 mg/kgBB), kontrol negatif (akuades 0,02 mL/gBB), pembanding (PGV-0 non-SNEDDS 28 mg/kgBB), dan senyawa uji PGV-0 SNEDDS dengan 3 tingkat dosis yaitu 10, 20, dan 40 mg/kgBB. Hasil yang didapatkan berupa jumlah kumulatif geliat yang ditandai dari adanya peregangan kaki belakang pada hewan uji yang diolah menjadi daya analgesik (%) dan diuji secara statistika dengan metode ANOVA satu arah (signifikansi 95%).

Hasil penelitian menunjukkan kelompok perlakuan kontrol positif parasetamol menunjukkan efek analgesik dengan daya analgesik (%) sebesar 20,14%. Sementara itu meski tidak ditemukan adanya perbedaan signifikan antar kelompok perlakuan ($p = 0,633$), diamati adanya kenaikan daya analgesik (%) seiring dengan meningkatnya dosis pemberian senyawa uji PGV-0 SNEDDS. Pemberian PGV-0 SNEDDS 40 mg/kgBB pada mencit menunjukkan daya analgesik (%) tertinggi dengan nilai 30,84%, diikuti PGV-0 SNEDDS 20 mg/kgBB dengan 20,92%, PGV-0 SNEDDS 10 mg/kgBB 16,52%, dan terakhir pembanding PGV-0 non-SNEDDS, 9,44%. Berdasarkan hasil penelitian dapat disimpulkan formulasi SNEDDS pada PGV-0 tidak meningkatkan efek analgesik yang teramati pada hewan uji dengan nilai ED_{50} 80,08 mg/kgBB.

Kata kunci : Pentagamavunon-0, SNEDDS, analgesik, metode geliat

ABSTRACT

The abundance of pain reliever medicines unfortunately is still being haunted by its dire side effect which is potentially damaging vital organ, namely liver or heart. In an effort to tackle this problem, development of alternatives is being continuously explored. Pentagamavunon-0 (PGV-0), an analogue substance of curcumin, is found to show notable effect as an analgesic with less toxicity on liver or heart. Unfortunately, its low bioavailability in blood stream hinders it to reach its optimum potential. Thus, a modification in drug delivery system in a form of Self-nanoemulsifying Drug Delivery System (SNEDDS) is proposed to improve PGV-0's lacking bioavailability property.

A study of its analgesic activity is conducted by writhing method on female BALB/c mice using acetic acid as pain inducer substance with dose given 300 mg/kgBW. A total of 30 mice are classified into 6 different groups (5 mice each): positive control group (acetaminophen 113,75 mg/kgBW), negative control group (distilled water 0,02 mL/gBW), comparative group (PGV-0 non-SNEDDS 28 mg/kgBW), and 3 groups of PGV-0 SNEDDS with 3 graded doses (10 mg/kgBW, 20 mg/kgBW, and 40 mg/kgBW). The result is collected by calculating the cumulative number of the writhing observed in mice, identified by stretching movement on its hinds, which later will be analyzed statistically by one-way ANOVA with 95% level of significance.

It's observed in positive control group that paracetamol showed an analgesic activity with 20,14% of analgesic percentage. While the overall results are found to be statistically unsignificant (p = 0,633), PGV-0 SNEDDS modification, compared to PGV-0 non-SNEDDS, resulted in better activity as pain reliever as shown by its higher level of percentage on analgesic activity. PGV-0 non-SNEDDS is shown to demonstrate smallest analgesic activity with 9,44% compared to its PGV-0 SNEDDS counterparts which showed an increase in analgesic activity in line with the rise of the administered dose. The analgesic activity of PGV-0 SNEDDS from the lowest to highest dose respectively are 16,52%, 20,92%, and 30,84%. In conclusion, the SNEDDS modification on PGV-0 is unable to elevate its analgesic activity and has the value of ED_{50} 80,08 mg/kgBW.

Keyword: Pentagamavunon-0, SNEDDS, analgesic, writhing method