# ABSTRAK

**Latar Belakang.** Nefrolitiasis atau batu ginjal merupakan suatu kondisi adanya batu ginjal yang disebabkan oleh gangguan keseimbangan antara kelarutan dan pengendapan garam di saluran kemih dan ginjal. Ginjal adalah tempat akumulasi dan terbentuknya batu (kalkuli). Batu yang paling banyak dijumpai adalah batu kalsium termasuk kalsium oksalat dan kalsium fosfat, kurang lebih 70-80% dari seluruh batu saluran kemih. Senyawa oksalat pada kondisi tertentu berbentuk larutan, sehingga dapat dikeluarkan dari tubuh melalui air kencing. Namun, pada kondisi lain, senyawa oksalat bereaksi dengan ion kalsium membentuk kristal kalsium oksalat yang sukar larut, semakin lama kristal tersebut akan membentuk gumpalan batu pada ginjal yang dapat mengganggu fungsi ginjal maupun saluran kencing. Bunga mawar mengandung senyawa kimia terpenoid, glikosida, flavonoid dan antosianin.
**Metodologi.** Penelitian ini merupakan penelitian eksperimental. Penelitian ini menggunakan 6 kelompok yaitu kelompok kontrol (K0); etilen glikol 0,75% dan amonium klorida 2% sebagai penginduksi (K-); induksi dan Batugin eliksir (K+); penginduksi dan eliksir ekstrak etanol bunga mawar (*Rosa damascena*) dosis 250 mg/kg berat badan (P1); 500 mg/kg berat badan (P2) dan 1000 mg/kg berat badan (P3). Perlakuan dilakukan selama 28 hari dengan pemeriksaan kristal urin, pH urin dilakukan pada hari ke 14 dan 28, pengukuran bobot badan tikus dilakukan pada hari ke 14, dan 28. Pada akhir masa perlakuan, tikus dinekropsi menggunakan kombinasi ketamin xylazine dan diambil ginjalnya. Pengamatan dilakukan terhadap rasio berat ginjal terhadap berat badan tikus, histopatologi ginjal dan pengukuran kadar kreatinin serum dan ureum darah menggunakan spektrofotometer.
**Hasil.** Penelitian dilakukan dengan 24 subjek penelitian. Dari hasil pemeriksaan didapatkan hasil eliksir ekstrak etanol bunga mawar (*Rosa damascena*) menunjukkan pemulihan kondisi pasca pemberian ekstrak yang ditandai dengan kenaikan berat badan, penurunan rasio bobot ginjal, penurunan konsentrasi kreatinin dan serum ureum darah, penurunan jumlah deposit kristal ginjal. Hasil penelitian menunjukkan bahwa pada pengamatan hari ke 28, hasil rata-rata jumlah kristal masing-masing kelompok adalah 1,40 $\pm$ 0,55 (K0), 8,00 $\pm$ 1,00 (K-), 3,20 $\pm$ 0,45 (K+), 4,20 $\pm$ 0,82 (P1), 1,80 $\pm$ 0,45 (P2), 3,00 $\pm$ 1,15 (P3). Eliksir ekstrak etanol bunga mawar (*Rosa damascena*) dosis 500 mg/kg BB (P2) mampu melarutkan kristal kalsium oksalat dengan jumlah terendah. Hasil penelitian menunjukkan ginjal mengalami kerusakan pada semua kelompok tikus. Hasil pengamatan histopatologi menunjukkan ginjal mengalami kerusakan berupa degenerasi, nekrosis, radang, pendarahan interstisial, dilatasi lumen dan terbentuk kista di epithelial pelvis renis.
**Kesimpulan.** Eliksir ekstrak etanol mampu melarutkan kristal kalsium oksalat dengan dosis terbaik yaitu 500 mg/kg BB. Pemberian eliksir ekstrak etanol bunga mawar tidak dapat memperbaiki histopatologi ginjal.



**Kata Kunci :** Kalsium oksalat, eliksir, bunga mawar, kelarutan



## *ABSTRACT*

***Background.*** *Nephrolithiasis or kidney stones is a condition of the presence of kidney stones caused by a disturbance in the balance between solubility and salt in the urinary tract and kidneys. The kidneys are the site of accumulation and formation of stones (calculi). The most common*

*stones are calcium stones including calcium oxalate and calcium phosphate, approximately 70-80% of all canal stones. Oxalate compounds under certain conditions in solution, so they can be excreted from the body through urine. However, in other conditions, oxalate compounds react with calcium oxalate calcium ions which are difficult to dissolve, the longer the crystals will form stones in the kidneys which can interfere with kidney and urinary tract function. Roses contain chemical compounds terpenoids, glycosides, flavonoids and anthocyanins.*

***Methodology**. This research is an experimental research. This study used 6 groups, namely the control group (K0); 0,75% ethylene glycol and 2% ammonium chloride as inducers (K-); induction and Batugin elixir (K+); inducer and elixir of ethanolic extract of rose (Rosa damascena) dose 250 mg/kg body weight (P1); 500 mg/kg body weight (P2) and 1000 mg/kg body weight (P3). The treatment was carried out for 28 days by examining urine crystals, urine pH was carried out on days 14 and 28, body weight measurements of rats were carried out on days 14, and 28. At the end of the treatment period, rats were necropsied using a combination of ketamine xylazine and their kidneys were taken. Observations were made on the ratio of kidney weight to body weight of rats, kidney histopathology and measurement of serum creatinine and blood urea levels using a spectrophotometer.*

***Results.** The study was conducted with 24 research subjects. From the results of the examination, it was found that the elixir of the ethanolic extract of rose flower (Rosa damascena) showed recovery of the condition after administration of the extract which was characterized by weight gain, decreased kidney weight ratio, decreased concentration of creatinine and blood serum urea, decreased number of kidney crystal deposits. The results showed that on the 28th day of observation, the average number of crystals for each group was 1.40 + 0.55 (K0), 8.00 + 1.00 (K-), 3.20 + 0, 45 (K+), 4.20 + 0.82 (P1), 1.80 + 0.45 (P2), 3.00 + 1.15 (P3). The elixir of ethanolic extract of rose (Rosa damascena) dose of 500 mg/kg BW (P2) was able to dissolve the lowest amount of calcium oxalate crystals.*

*The results showed that the kidneys were damaged in all groups of rats. Histopathological observations showed that the kidneys were damaged in the form of degeneration, necrosis, inflammation, interstitial bleeding, lumen dilatation and cyst formation in the renal pelvic epithelium.*

***Conclusion.** Elixir of ethanol extract was able to dissolve calcium oxalate crystals with the best dose of 500 mg/kg BW. Giving elixir of rose flower ethanol extract could not improve kidney histopathology.*

***Keywords :** calcium oxalate, elixir, rose flower, solubility*