

RINGKASAN

Inflamasi adalah respons biologi yang terjadi akibat adanya stimulasi merugikan seperti patogen dan iritan. Reaksi inflamasi jika berlebihan akan merugikan sehingga diperlukan obat antiinflamasi. Jamur lingzhi (*Ganoderma lucidum*) dikembangkan sebagai obat antiinflamasi yang berasal dari bahan alam. Jamur ini mengandung senyawa bioaktif flavonoid dan triterpenoid yang dilaporkan memiliki aktivitas antiinflamasi. Potensi antiinflamasi dari jamur lingzhi ini perlu dibuat sediaan farmasinya dalam bentuk nanogel untuk meningkatkan efikasinya. Nanogel ekstrak jamur *G. lucidum* diharapkan dapat digunakan sebagai alternatif obat antiinflamasi. Nanogel ini diuji aktivitas antiinflamasinya dengan model hewan uji menggunakan tikus jantan galur Wistar (*Rattus norvegicus*) yang diinduksi dengan *Complete Freund's Adjuvant* (CFA) pada telapak kaki tikus.

Tujuan penelitian ini untuk mengetahui aktivitas nanogel ekstrak jamur *G. lucidum* dan mengetahui efektivitas nanogel jika dibandingkan dengan ekstrak *G. lucidum* sebagai antiinflamasi pada hewan tikus yang diinduksi CFA. Penelitian ini menggunakan metode eksperimental dengan rancangan penelitian Rancangan Acak Lengkap (RAL) menggunakan 6 perlakuan. Parameter utama penelitian ini adalah kadar *Immunoglobulin E* (IgE), *Tumor Necrosis Factor- α* (TNF- α), Interleukin 1- β (IL-1 β), dan eosinofil darah tikus. Parameter pendukungnya yaitu jumlah total leukosit darah tikus, volume *udema*, indeks artritis, dan ketebalan kaki tikus. Data hasil penelitian dianalisis menggunakan *Analysis of Variance* (ANOVA) pada tingkat kepercayaan 95% dilanjutkan dengan uji Duncan pada tingkat kesalahan 5%. Data dianalisis menggunakan software Graphad Prism 10.

Hasil penelitian menunjukkan bahwa perlakuan ekstrak etanol *G. lucidum* dan nanogel ekstrak etanol *G. lucidum* terbukti memiliki aktivitas antiinflamasi. Penggunaan nanogel ekstrak etanol *G. lucidum* secara efektif mampu menurunkan kadar IgE, TNF- α , IL 1- β , kadar eosinofil, serta menurunkan total leukosit darah tikus, volume *udema*, indeks artritis, dan ketebalan telapak kaki tikus.

Kata kunci: *jamur lingzhi* (*Ganoderma lucidum*), *nanogel*, *antiinflamasi*, *CFA*, *IgE*.

SUMMARY

Inflammation is a biological response that occurs due to harmful stimulation such as pathogens and irritants. If excessive inflammatory reactions are detrimental, anti-inflammatory drugs will be needed. Lingzhi mushroom (*Ganoderma lucidum*) can be used as an alternative traditional drug. Lingzhi (*G. lucidum*) was developed as an anti-inflammatory drug derived from natural ingredients. These mushrooms contain bioactive compounds of flavonoids and triterpenoids that are to have anti-inflammatory activity. The anti-inflammatory potential of this lingzhi mushroom needs to be made pharmaceutical preparation in the form of nanogels to improve its effectiveness. *G. lucidum* extract nanogel is expected to be used as an alternative to anti-inflammatory drugs. An animal model using male Wistar rats (*Rattus norvegicus*) to test the anti-inflammatory effect was created by inducing Complete Freund's Adjuvant (CFA) on the rat's paw.

The aim of this research was to determine the activity of the *G. lucidum* mushroom extract nanogel and to determine the effectiveness of the nanogel when compared with *G. lucidum* extract as an anti-inflammatory in CFA-induced mice. This research used experimental methods on rats induced by CFA. The research design used was a Completely Randomized Design (CRD) with six treatments. The main parameters of this study were IgE levels, TNF- α , IL-1 β , and blood eosinophils in mice. The supporting parameters were the total number of rat blood leukocytes, edema volume, arthritis index, and the thickness of the rat's legs. The data were analyzed using Analysis of Variance (ANOVA) at a confidence level of 95% followed by the Duncan test that error level was 5%. The data were analyzed using Graphad Prism 10 software.

The results showed the treatment with *G. lucidum* ethanol extract and *G. lucidum* ethanol extract nanogel was proven to have anti-inflammatory activity. The use of *G. lucidum* ethanol extract nanogel could effectively reduce IgE levels, TNF- α , IL 1- β , eosinophil levels, as well as reduce the total rat blood leukocytes, edema volume, arthritis index, and the thickness of rat paws.

Key words: lingzhi mushroom (Ganoderma lucidum), nanogel, anti-inflammatory, CFA, IgE.