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Skripsi, Maret 2022
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FORMULASI DAN UJI SIFAT FISIK GRANUL *EFFERVESCENT* NANOPARTIKEL EKSTRAK DAUN INSULIN (*Tithonia diversifolia*)

ABSTRAK

Latar belakang : Daun insulin merupakan salah satu tanaman yang berasal dari alam yang memiliki aktivitas farmakologi. Tujuan pembuatan dari ekstrak daun insulin dibuat menjadi sediaan nanopartikel, kemudian dibuat sediaan *effervescent* untuk memperoleh formula granul dengan bahan berkhasiat ekstrak daun insulin dengan variasi asam tartat dan natrium bikarbonat untuk mengetahui variasi tersebut pada sifat fisik granul *effervescent*.
Metode : Penelitian ini merupakan penelitian eksperimental untuk mengetahui karakteristik ekstrak nanopartikel daun insulin dengan metode gelas ionik, dilakukan karakteristik meliputi ukuran partikel, nilai PDI dan persen transmitan. Kemudian uji sifat fisik granul *effervescent* nanopartikel untuk mengetahui formulasi yang paling baik.
Hasil : Pada uji karaktersitik nanopartikel ekstrak daun insulin untuk ukuran partikel 220.7 nm, nilai PDI 0.928, persen transmitan dengan rata-rata 97,613%. Hasil uji sifat fisik granul effervescent pada formula I kadar air 12,095%, susut pengeringan 10,79%, sudut istirahat $66,455^0$, kecepatan alir 26,67g/det, waktu melarut 2,18menit, formula II untuk kadar air 18,609%, susut pengeringan 15,69%, sudut istirahat $68,813^0$, kecapatan alir 19,23g/det, waktu melarut 3,17menit, formula III kadar air 21,542%, susut pengeringan 17,724%, sudut istirahat $65,467^0$, kecepatan alir 17,10g/det, waktu melarut 3,15menit.
Simpulan : Skrining fitokimia ekstrak daun insulin positif mengandung senyawa alkaloid, flavonoid, saponin, tanin, dan fenolik. Karakteristik nanopartikel memenuhi persyaratan, uji sifat fisik pada granul effervescent memenuhi syarat, untuk kadar air dan sudut diam tidak memenuhi syarat, salah satu formulasi granul yang mendapatkan nilai terbaik yaitu formula satu.
Kata kunci : Ekstrak daun insulin, nanopartikel, granul *effervescent*

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Finaly Project, March 2022
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FORMULATION AND PHYSICAL PROPERTIES TESTING OF *EFFERVESCENT* NANOPARTICLES OF INSULIN LEAF EXTRACT (*Tithonia diversifolia*) GRANULES

ABSTRACT

Background : Insulin leaf is one of the plants that comes from nature which has pharmacological activity. The purpose of making insulin leaf extract is made into nanoparticles preparations, then effervescent preparations are made to obtain a granule formula with the efficacious ingredients of insulin leaf extract with variations in tartic acid and sodium bicarbonate to determine the variation in the physical properties of effervescent granules.
Methods: This research is an experimental study to determine the characteristics of insulin leaf nanoparticle extract using the ionic glass method, the characteristics include particle size, PDI value and percent transmittance. Then test the physical properties of *effervescent* nanoparticles to determine the best formulation.
Results: In the characteristic test of insulin leaf extract nanoparticles for particle size 220.7 nm, PDI value 0.928, percent transmittance with an average of 97.613%. The results of the physical properties test of effervescent granules in formula I 12.095% moisture content, drying shrinkage 10.79%, angle of repose $66,455^0$, flow rate 26.67g/det, dissolving time 2,18menit, formula II for water content 18.609%, drying shrinkage 15 .69%, angle of repose $68,813^0$, flow rate 19.23g/det, dissolving time 3,17menit, formula III water content 21.542%, drying shrinkage 17.724%, angle of repose $65,467^0$, flow rate 17.10g/det, dissolving time 3,15menit.
Conclusion: Phytochemical screening of insulin leaf extract was positive for alkaloids, flavonoids, saponins, tannins, and phenolic compounds. The characteristics of the nanoparticles met the requirements, the physical properties test on the effervescent granules met the requirements, for the water content did and angle of repose did not meet the requirements, one of the granule formulations that got the best value was formula one .
Keywords: insulin leaf extract, nanoparticles, *effervescent* granules