

## Biosintesis nanopartikel Au menggunakan ekstrak bawang putih (*allium sativum* l.) sebagai pendeteksi formalin = Biosynthesis Au nanoparticles using garlic extract (*allium sativum* l.) as and melamine formaldehyde detector

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### Abstrak

[Senyawa bahan alam yang mengandung banyak senyawa pereduksi dan gugus-gugus organik kurang termanfaatkan dengan baik untuk sintesis nanopartikel. Ekstrak bawang putih (EBP) (*allium sativum* L) dapat dimanfaatkan sebagai reaktan dalam pembuatan nanopartikel Au (AuNP). EBP dapat mereduksi dan menstabilkan AuNP. AuNP di karakterisasi menggunakan spektrofotometer UV-Vis dan TEM sedangkan EBP dikarakterisasi menggunakan FTIR, dan LCMS. AuNP optimum yang di karakterisasi menggunakan TEM memiliki ukuran 15 nm dan memiliki kestabilan hingga 33 hari. Berdasarkan hasil FTIR dan LCMS, senyawa aktif yang diduga berperan sebagai agen pereduksi adalah asam askorbat (vitamin C), gula bebas seperti, surosa, glukosa, dan fruktosa, allin, alicin, dan s-alilsistein dan senyawa aktif yang diduga berperan sebagai agen penstabil adalah -glutamilsistein, -glutamil-s-alilsistein, -glutamil phenil alanin, s-alil mercaptosistein, metil alil tiosulfonat, dan prophenil alil tiosulfonat. AuNP yang terbentuk dapat dimanfaatkan sebagai pendeteksi terhadap formalin dan melamin pada kondisi pH 3,6.

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Compounds of natural product that many contain reducing compounds and organic groups are less well utilized for the synthesis of nanoparticles. Garlic extract (EBP) (*allium sativum* L) can be used as a reactant in the manufacture of nanoparticles Au (AuNP). EBP can reduce dan stabilize AuNP. AuNP characterized using spectrophotometer UV-Vis and TEM while EBP characterized using FTIR and LCMS. AuNP optimum that characterized by TEM has size 15 nm and has stability up to 33 days. Based on the results of FTIR and LCMS, the active compounds are expected have role as reducing agent is ascorbic acid (vitamin C), free sugar such as, sukrose, glucose, and fructose, allin, Alicin, and s-alilsistein and the active compounds are thought to act as a stabilizing agent is -glutamilsistein, -glutamyl-s-alilsistein, -glutamyl phenil alanine, s-allyl mercaptosistein, allyl methyl tiosulfonat, and allyl prophenil tiosulfonat. Aunp formed can be used as a detector of the formaldehyde and melamine at pH 3.6.;Compounds of natural product that many contain reducing compounds and organic groups are less well utilized for the synthesis of nanoparticles. Garlic extract (EBP) (*allium sativum* L) can be used as a reactant in the manufacture of nanoparticles Au (AuNP). EBP can reduce dan stabilize AuNP. AuNP characterized using spectrophotometer UV-Vis and TEM while EBP characterized using FTIR and LCMS. AuNP optimum that characterized by TEM has size 15 nm and has stability up to 33 days. Based on the results of FTIR and LCMS, the active compounds are expected have role as reducing agent is ascorbic acid (vitamin C), free sugar such as, sukrose, glucose, and fructose, allin, Alicin, and s-alilsistein and the active compounds are thought to act as a stabilizing agent is -glutamilsistein, -glutamyl-s-alilsistein, -glutamyl phenil alanine, s-allyl mercaptosistein, allyl methyl tiosulfonat, and allyl prophenil tiosulfonat. Aunp formed can be used as a detector of the formaldehyde and melamine at pH 3.6.;Compounds of natural product that many contain reducing compounds and organic groups are less well utilized for the synthesis of nanoparticles. Garlic extract (EBP) (*allium sativum* L) can

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