

Potensi bioreduksi dan fungsionalisasi nanopartikel au dengan ekstrak kulit manggis garcinia mangostana l sebagai pendeteksi formalin dan melamin = Potentiality of bioreduction and functionalization of gold nanoparticles from mangosteen pericarp extract garcinia mangostana l as detector for formaldehyde and melamine

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Abstrak

Pencemaran makanan oleh zat aditif seperti formalin dan melamin merupakan hal yang sudah tidak asing lagi di telinga kita. Pengembangan metode yang mudah, cepat, dan sensitif untuk mendeteksi formalin dan melamin sangat penting, salah satunya dengan nanopartikel Au (AuNP). Dalam sintesis AuNP seringkali digunakan bahan yang mencemari lingkungan. Pada penelitian ini berhasil dikembangkan green synthesis AuNP dengan ekstrak kulit manggis (EKM) (*Garcinia Mangostana L.*) yang berpotensi sebagai pendeteksi formalin dan melamin.

Hasil partisi, kromatografi kolom, KLT, dan karakterisasi dengan spektrofotometer FTIR dan LC-MS menunjukkan bahwa senyawa aktif yang terkandung dalam EKM yang diusulkan adalah senyawa aktif turunan flavonoid. Pada kondisi optimum sintesis AuNP@EKM diperoleh maks 531 nm (22 nm).

AuNP@EKM stabil selama 17 hari dengan maks 530-532 nm. Hasil karakterisasi spektrofotometer UV-Vis dan PSA menunjukkan AuNP@EKM berpotensi mendeteksi formalin dan melamin ditandai dengan pergeseran maks dan perubahan warna koloid AuNP@EKM akibat adanya interaksi hidrogen.

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Developments of easy, rapid, and sensitive methode to detect formaldehyde and melamine are precisely very important and one of the methodes is detection with gold nanoparticles (AuNP). In synthesis of AuNP, often used materials that pollute the environment. This research has successfully developed green synthesis AuNP with mangosteen peel extract (MPE) (*Garcinia Mangostana* Contamination of food additives such as formaldehyde and melamine is familiar in this recent cases. Developments of easy, rapid, and sensitive methode to detect formaldehyde and melamine are precisely very important and one of the methodes is detection with gold nanoparticles (AuNP). In synthesis of AuNP, often used materials that pollute the environment. This research has successfully developed green synthesis AuNP with mangosteen peel extract (MPE) (*Garcinia Mangostana L.*) that had potentiality as detector for formaldehyde and melamine.

The results of the partition, column chromatography, TLC, and characterization by FTIR spectrophotometer and LC-MS showed that the active compound contained in MPE is flavonoid derivative active compound.

The optimum condition of AuNP@MPE synthesis was obtained at maks 531 nm (22 nm). AuNP@MPE stable for 17 days with maks 530-532 nm. The results of characterization of UV-Vis spectrophotometer and PSA showed that AuNP@MPE has potentiality to detect formaldehyde and melamine. It characterized by shifting of maks and discoloration of the colloidal AuNP@MPE due to the interaction of hydrogen.