

**Application of malva nut gum as bioreductor and stabilizer on gold nanoparticle synthesis:
Preparation of Chikungunya immunoassay biosensor**

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Abstract

Gold nanoparticles can be used as detectors in various diagnostics and therapeutics of diseases. Currently, we are developing a diagnostic kit for Chikungunya virus by using gold nanoparticle as biosensor on immunoassay. One of the preliminary steps of the research is to synthesize gold nanoparticles by natural product as bioreductor. Green-gold nanoparticle was chosen as the candidate of biosensor because of its low toxicity. Gold nanoparticle was produced by using malva nut gum (*Scaphium macropodum* (Miq.) Buem.) as bioreductor and biostabilizer. Tetrachloroauric acid (HAuCl₄) solution was mixed with malva nut gum; and stirred until the gold nanoparticle's colour turn into red. The optimum reaction time and concentration of malva nut gum as bioreductor were 4 hours and 3% w/v, respectively. Moreover, the product was stable for 23 days. It was found that the speed of stirring of synthesis also influenced the particle size. Particle size ranged from 74-106 nm was produced by 500 rpm of stirring for 4 hours. The product was characterized by spectrophotometer UV-Vis, SEM / EDS, and FTIR.

Keywords: Malva nut gum; bioreductor; biostabilizer; gold nanoparticle; Chikungunya

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