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# *GOLD NANORODS SYNTHESIZED USING ANALYTICAL AND COMMERCIAL RUTIN: EFFECTS ON SURFACE PLASMON RESONANCE*

**Lucas Henrique Faria Santos**[1*], Kennedy Batista Gonçalves[2], Tiago Silveira Contijo[1], Juliana Cristina dos Santos Almeida Bastos[1], Livia Siman Gomes[2], Rosimeire Coura Barcelos[1]

lucashenriquefs3@gmail.com

*[1]Federal University of São João del-Rei (UFSJ), Campus Centro-Oeste Dona Lindu, Divinópolis, MG, Brazil – 35.501-296; [2]Nanomaterials and Graphene Technology Center, Federal University of Minas Gerais, BH/MG – 31.310-260.*

Gold nanorods (AuNRs) have been widely applied in biomedicine, sensing, and electronics due to their unique physicochemical properties, such as high colloidal stability and tuneable optical absorption via aspect ratio modulation [1]. Several chemical synthesis strategies employ reducing and stabilizing agents to ensure colloidal stability and enable the functionalization of AuNRs for therapeutic and diagnostic purposes [2]. In this context, rutin, a natural flavonoid widely found in plants, exhibits antioxidant properties and can act as a reducing agent in the synthesis. In this study, we reported a comparison between AuNRs synthesized in seedless syntheses mediated by rutin samples purchased from Aldrich and from a compounding pharmacy. Chloroauric acid (0.1 mol/L), silver nitrate (0.025 mol/L), and rutin (0.055 mol/L) were sequentially added to a CTAB solution (0.055 mol/L) under continuous stirring. Subsequently, a NaBH4 solution (4.5 mmol/L) was added. Finally, the reaction mixture was heated to 70 °C and incubated for 4 h. The characterization of AuNRs was performed using UV-Vis spectroscopy. The nanorods obtained by analytical and commercial purity rutin exhibited localized Surface Plasmon Resonance (LSPR) at 718 nm and 802 nm, respectively. These results demonstrate that the degree of purity of the reducing agent significantly influenced the optical properties of AuNRs. The observed change in LSPR highlighted the importance of selection and possible purification of reducing agents to achieve specific nanostructural characteristics. Studies are underway to optimize the synthesis and purification parameters of commercially available rutin, a cheaper reagent, aiming to increase control over nanorod morphology and plasmonic behavior.

***Keywords:*** *Gold nanorods; Seedless synthesis; Rutin.*

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