

in this study, Therefore, in this study, the effect of change reducing agent and various chemical and mechanical methods on the size and stability of gold nanoparticles, as well as the interaction of these nanoparticles with DNA of calf thymus tuber, were investigated. According to the analyses and the results, the method used in the presence of tri-sodium citrate, poly ethylene glycol and microwave was selected as the optimal method because the nanoparticles produced by this method have spherical shape and the highest degree of stability and efficiency due to the use of peptide. the nanoparticles synthesized by this method for experiments involving the interaction of gold nanoparticles with DNA of calf thymus gland (CT-DNA) using the UV-Vis spectroscopy technique was studied at 300 and 310 K temperatures. The amount of  $[L]_{\frac{1}{2}}$  resulted in a small amount, indicating that if this compound is used as an anticancer drug. A small amount of doses is needed, therefore, complications reduces the side effects of the drug. Binding parameters such as  $g$ ,  $K$ ,  $n$ ,  $v$  and thermodynamic parameters such as  $m$ ,  $\Delta G_{H_2O}^0$ ,  $\Delta H_{H_2O}^0$  and  $\Delta S_{H_2O}^0$  were determined to provide favorable results in the evaluation of anti-cancer properties of gold nanoparticles. The cytotoxicity studies of gold nanoparticles by MTT on the breast cancer cell line (MCF-7) showed  $Ic_{50}$  of gold nanoparticles of 24.1. Therefore, these nanoparticles are capable of inhibiting the activity, growth and proliferation of cancerous cells at low concentrations.

**Keywords:** Gold nanoparticles, peptid, anticancer, DNA binding studies, binding parameters, thermodynamic parameters.



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**Synthesis, identification and comparison of chemical and  
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presence of organic reducing agents and their interactions  
with CT-DNA**

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