

Docetaxol-Conjugate Gold Nanoparticles to treat Breast Cancer

Abstract

The purpose of the present study was to synthesise, functionalise and characterise gold nanoparticles applied as a drug carrier for a chemotherapeutic chemical agent known as docetaxel (DTX). These particles were tested for their ability and efficiency to kill cancerous cells.

Gold nanoparticles (AuNPs) were prepared and then, the surface of these gold nanoparticles was functionalised using two thiol agents: α -lipoic acid (ALA) and 16-Mercaptohexadecanoic acid (16-MHDA). The chemotherapeutic drug docetaxol was successfully conjugated to the surface of AuNPs. A variety of characterisation tools were used in this work including; UV-Vis spectroscopy, dynamic light scattering (DLS), fourier transform infrared spectroscopy (FTIR), nuclear magnetic resonance (NMR) as well as thermogravimetric analysis (TGA) for further investigation and confirmation of the formation of the DTX-conjugated AuNPs.