

**The influence of R substituents in triphenylphosphinegold(I) carbonimidothioates, Ph<sub>3</sub>PAu[SC(OR) = NPh] (R = Me, Et and iPr), upon in vitro cytotoxicity against the HT-29 colon cancer cell line and upon apoptotic pathways**

ABSTRACT

The Ph<sub>3</sub>PAu[SC(OR) = NPh], R = Me (1), Et (2) and iPr (3), compounds are significantly cytotoxic to the HT-29 cancer cell line with 1 being the most active. Based on human apoptosis PCR-array analysis, caspase activities, DNA fragmentation, cell apoptotic assays, intracellular reactive oxygen species (ROS) measurements and human topoisomerase I inhibition, induction of apoptosis is demonstrated and both the extrinsic and intrinsic pathways of apoptosis have been shown to occur. Compound 1 activates the p73 gene, whereas each of 2 and 3 activates the p53 gene. An additional apoptotic mechanism is exhibited by 2, that is, via the JNK/MAP pathway.

**Keyword:** Phosphinegold(I) compounds; Carbonimidothioate; Thiolate; Apoptosis; Cancer; Cell cycle