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Novel gold(I)-based compounds with *in vitro* anticancer activity.

Enrique Ortega,[1]Juan Jesús González,[1]Venancio Rodríguez,[1]Consuelo Vicente,[1]Concepción de Haro[1], Ingo Ott,[2]José Ruiz[1].

[1]Departamento de Química Inorgánica, Facultad de Química, BiomedicalResearchInstituteof Murcia (IMIB-Arrixaca-UMU), Universidad de Murcia, E-30071 Murcia, Spain.

[2]Institute of Medicinal and Pharmaceutical Chemistry, Technische Universität Braunschweig, Beethoven Straße 55, 38106, Braunschweig, Germany

Topic: Old Elements, New Technologies: how to improve the quality of life

Abstract:

As a symbol of purity and royalty, gold has accompanied the evolution of civilizations from the beginning of times and has been undoubtedly considered as one of the first metals used by humans. Historically, the importance of this element has been widely known for its applications in jewelry, artistic decoration, electronics or monetary usage. Conditioned by itsmetallic state, research on gold chemistry has given rise to innovative approaches in medicine and biology; for example, with the gold(I) complex auranofin in treatment of rheumatoid arthritis.[1]However, since the discovery of platinum compounds as anticancer agents in 1960s,[2] investigations on the efficacy of chemotherapeutic gold-based drugs have gained greater and greater attention. Over the past decades, several organometallic gold complexes have demonstrated potent cytotoxic activity against cancer cells.[3]This presentation gives an overview of the design, chemical synthesis and *in vitro* anticancer activity evaluation of two novel classes of gold(I) complexes recently developed by our research group. The first one is made up of a well-established clinical anticancer agent, erlotinib, coordinated to a metallic gold center along with a triphenylphosphine (PPh_3)ligand. On the other hand, the second familyof gold(I) complexes involves thechalcone(*E*)-3-(9-anthracenyl)-1-(pyridin-4-yl)prop-2-enone, whose properties are overwhelmingly promising in therapy against cancer,and either one PPh_3 or an N-heterocyclic carbene (NHC) group as co-ligand.

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