TCMAI metal-based anticancer agents targeting G-quadruplex DNA and telomerase

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Abstract: More recently, targeting G-quadruplexes is currently considered a practical strategy to design new anticancer drugs because it has been reported that many diseases such as cancer, HIV, and diabetes, were closely related to G-quadruplexes structures. G-quadruplexes widely exist in a variety of genes including bcl-2, c-myc, k-ras, the telomeres and c-kit G-quadruplex-forming sequences. They play a crucial role in regulating the gene expression of different oncogenes. We have developed a series of traditional Chinese medicines active ingredients (TCMAI) metal-based anticancer agents targeting G-quadruplex DNA and telomerase. These complexes exhibited high in vitro, in vivo anticancer activity and more in vivo safety than cisplatin. Some of them can overcome the cisplatin resistance and four lead compounds have been obtained. They usually displayed multi-targeting and multi-mechanism feature.

Keywords: Traditional Chinese medicine active ingredients (TCMAI); Metal-based anticancer agents; G-quadruplex DNA; Telomerase.