

18th Annual Pharmaceutical and Chemical Analysis Congress

November 05-06, 2018 | Madrid, Spain

⁹⁹mTc-labeled tamoxifen derivatives for breast tumor imaging

Tesnim Dallegi

National Center for Nuclear Sciences and Technologies, Tunisia

Breast cancer is the fifth most common cause of death from cancer overall. Breast tumors are traditionally classified according to their estrogen receptor status: hormone-dependent tumors (ER+), and hormone-independent tumors (ER-). These receptors serve as targets for endocrine therapies of these cancers. But they also can be used as targets for diagnostic imaging and radiotherapy. For example, antiestrogens such as tamoxifen are largely used for the treatment of women suffering of ER breast cancer. It is known that prolonged treatment with tamoxifen develops drug resistance. In order to overcome drug resistance phenomena and to find new types of drugs, we have developed organometallic analogs of tamoxifen based on ferrocene derivatives. The first examples were hydroxyferrocifen and ferrocenyl diphenol which exhibit an antiproliferative effect against both hormone dependent and hormone independent breast cancer cell lines. Pursuing our research on ferrocene derivatives, the point of interest in this type of compounds is their suitability for a transformation into its technetium analog, via a known metal exchange reaction. In molecular radioimaging, ⁹⁹mTc is the most widely used radionuclide, owing to its cheapness, easy availability and suitable physical characteristics ($t_{1/2}=6.0$ h, $E_{\gamma}=140.5$ keV). The search for improved or more tunable radiopharmaceuticals is still currently undertaken and recent research has been directed to radiopharmaceuticals based on compounds containing the CpTc(CO)³ group or Tc(CO)³ core because of the high stability of these moieties. Taking into account this important application, we thought it would be interesting to prepare several compounds and examine their potential as radiopharmaceuticals. Diagnostic imaging can be achieved by an administration of a suitably radiolabeled ligand that accumulates in the receptor-positive tumor where it can be detected and quantified by imaging. Such images can sometimes be used to predict whether hormone therapy is effective. Therefore, the development of such hormone receptor ligands for diagnostic imaging is a promising area of research.

Biography

Tesnim Dallegi is an Assistant Professor of Molecular and Cellular Biology at National Center for Nuclear Sciences and Technologies in Tunisia. She has completed her Diploma in Biochemistry at the University Tunis El Manar, Tunisia in 2001 and PhD in Molecular Chemistry at the University Pierre et Marie Curie, Paris, France in 2009. She joined the Department of Radiopharmaceutical in Nuclear Center of Tunisia as Senior Assistant in 2013. She is the Deputy Director of Unit Pilot of Production of the Radiopharmaceutical Kits in Technology Park, Sidi Thabet.

t.dallegi@laposte.net

Notes: