

sensitivity, speed and accuracy of biomarkers to utilize in clinical tumor diagnosis. By different techniques as immunofluorescence, cytofluorometry, Western blot, we have analyzed the different expression of some biomarkers in different tumor cell lines. In particular we analyzed the level of expression of TrkB Receptor to utilize as neuroblastoma prognostic factor; EP2 and EP4 receptors (for PGE2) to utilize as prognostic factors for lung adenocarcinoma; ICAM-1 and FASL to utilize as lung carcinoma and mesothelioma prognostic factors. On the basis of these results we have planned to functionalize Ft-NPs with the ligands specific for these tumor biomarkers to be employed as diagnostic tools.

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Incorporation of Pt(II) complex with [amino-2-(methylthio)(1,2,4)triazolo-(1,5-a)pyrimidine-6-carboxylic-acid] ligand in MCM41 for controlled release

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Drug carriers play a critical role for the loading and the release of the drug. A promising frontier is represented by a new class of innovative medicines that represents directional transport vehicles "drug delivery" and consist of assembled structures carrier (nano)-drug. Silica-based materials, nontoxic, biocompatible, have been used as adjuvant and excipient in pharmaceutical technology. In this class of compounds, the mesoporous materials, such as MCM41, SBA-15 and hexagonal mesoporous silica, have been investigated for medication and drug delivery due to their properties. In fact, these materials show a large specific pore volume made up of regular pores having a diameter in the nanometer range, which facilitates controlled delivery of pharmaceutical drugs. Recently, a new anticancer drug, the cis-[PtCl₂(DMSO)HL]·2DMSO, where HL = 7-amino-2-(methylthio)[1,2,4]triazolo[1,5-a]pyrimidine-6-carboxylic acid, has been synthesized and tested [1]. It exhibited a very marked biological activity on HepG2 hepatocarcinoma cells while under identical conditions it did not affect normal immortalized human liver cells (Chang Liver cells). The scope of this work is to design and investigate a new material constituted by this drug and by mesoporous MCM41 or the MCM41 functionalized with amino group as support. The choice to use the functionalized MCM41 is to investigate the role of the amino group in the release. The MCM41 was functionalized with amino groups using the grafting method. The incorporation of the drug in the two mesoporous was performed by mixing the two components in chloroform. A detailed characterization of the materials was made using X-ray Diffraction (XRD), FT-IR Spectroscopy, and ²⁹Si Cross Polarization - Magic Angle Spinning NMR (²⁹Si {¹H} CP - MAS NMR). The release was evaluated at pH 7.4 and T=37°C in a phosphate buffer solution (PBS) in order to simulate the cellular conditions.

[1] Rubino S., Di Stefano V., Attanzio A., Tesoriere L., Girasolo M.A., Nicolò F., Bruno G., *Inorganica Chimica Acta* 418 (2014) 112-118