Abstract No.45

Study of the effect of hyperthermia in the presence gold nano particles and cisplatin on MM200 melanoma cell line

R. Moradpoor[1,2], A . Sazgarnia[3], O. Rajabi[4], S.A. Aledavood[2], J. Chamani[1]*

1- Department Of Biology, Faculty of Science, Islamic Azad University-Mashhad Branch, Mashhad, Iran, 2- Radiotherapy Department, Omid Hospital, Mashhad University 0f Medical Sciences, Mashhad, Iran, 3- Medical Physics Department, School Of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran, 4- Medical Chemistry Department, School Of Pharmacy, Mashhad University of Medical Sciences, Mashhad, Iran

Novel approaches to treat cancer that are effective with minimal toxicity profiles are needed. In the present study we evaluated gold nano-particles (GNP_s) in human melanoma cell lines (MM200) to determine: intrinsic cytotoxity of the GNP_s (50 nm diameters) and microwave-induced heating of intracellular GNP_s to produce thermal destruction of melanoma cells. We examined the anti-tumor effects of combining cisplatin and GNP_s with microwave-mediated hyperthermia in cell cultured MM200 melanoma cells. Cell culture divided in to eight groups: group 1; no treatment (control); group 2: cisplatin alone; group 3: one hyperthermia treatment; group 4: GNP_s alone; group 5: cisplatin with microwave; group 6: cisplatin with GNP_s; group7: cisplatin with GNP_s and hyperthermia; group 8: GNP_s with hyperthermia. Then with MTT assay, assessed cell proliferation per group. In addition, to clarify the rules of the every agents in MM200 in the presence of nano-particle and hyperthermia we used from SDS page electrophoresis of the samples before and after agents effects for understanding the protein mechanism of hyperthermia in the presence of nano-particles.

Key words: hyperthermia, gold nano particles, cisplatin, melanoma cell line.

Abstract No.46

A novel view of the simultaneous interaction of two anti-breast cancer drugs with human serum albumin: Spectroscopic approaches

M. Sabaghian[1], M.R. Housaindokht[2] and J. Chamani[1]*

1- Department of Biology, Faculty of Science, Islamic Azad University-Mashhad Branch, Mashhad, Iran, 2- Department of Chemistry, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran

Human serum albumin (HSA) is the most important and abundant constituent of blood plasma. It is a globular protein composed of 585 amino acid residues in three homologous α-helical domains (I,II,III). Information on the interaction of HSA with drug can help us better understand the absorption and distribution of drug. Therefore, it has become an important research field in chemistry, life science, and clinical medicine. Acetaminophen, commonly known as Tylenol, is a medication used to treat fewer and mild to moderate pain. Acetaminophen is available alone and in combination with other medications to treat symptoms of colds, flu, headache and osteoarthritis. Fluoxymestrone is a male hormone used to treat delayed male puberty or to treat a testosterone/androgen deficiency. In woman, this medication is used to treat breast cancer. The interaction between acetaminophen with HSA at physiological conditions (pH=7.4) investigated by fluorescence spectroscopy. Quantitative analysis of binding parameters (e.g. quenching constants) indicates the affinity to the binding site. The binding of acetaminophen to HSA quenches the tryptophan residue fluorescence at 280 nm, and the results show the static quenching occurs with complex formation. The binding constant and binding sites of acetaminophen to HSA are calculated. In addition, the binding constants and binding sites for acetaminophen with being of fluoxymestrone in interaction to HSA at 280 nm were determined. Analysis of quenching of fluorescence of HSA in the binary system showed that fluoxymestrone affect the complex formed between acetaminophen and HSA. On the basis of K_a and K_q values in was concluded that fluoxymestrone may probably cause decrease affinity of acetaminophen to serum albumin. Static quenching for the binary system calculated. The binding constants of acetaminophen-HSA and fluoxymestrone complexes with it calculated for the second class of binding sites.

Key words: Human serum albumin, Spectroscopic techniques, Fluoxymestrone.
