

Derivatives of 1,2 Diketo Propane and its role in anti cancer activity

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Cancer which has become the most devastating disease of this era is an uncontrolled growth of cells through division beyond normal limits. Till now in research there are a number of therapies which have come up to fight against this disease. But unfortunately most of them are so toxic and injurious that the medicines become cause of the death of the patient. Among the safer therapeutics, Methylglyoxal is a one suggested by Albert Szent-Gyorgyi in 1963 which he termed as Retine.

This dicarbonyl compound which has both an aldehyde and ketone groups has been found to have anti-cancer property and produced by metabolic pathways like "glycolysis" to fight cancer in biological system through the destruction of mitochondria inside our body and it has been found that heat shock protein 27 (Hsp27) as a specific target of posttranslational modification by methylglyoxal in human metastatic melanoma cells. Biological origin and its role in anti-cancer activity are well established by Ray et al.

We have synthesized many derivatives which are modification of methylglyoxal and tested on cancer cell lines like B-16, HeLa, YAC-1 etc and found the results very promising. The compounds like 1,2-diketobutane, 3-methoxy and 3-ethoxy 1,2 diketopropane, 3(4methoxy) 1,2 diketopropane and many other derivatives have been synthesized and derivatives effectively inhibit the growth of cancerous cells and not causing any harm to the healthy cells. Preliminary treatment of these derivatives show, the tumoral growth is completely subsided by the healthy cells. Early results on animal models are highly encouraging.

Biography

Arindam Pramanik has completed his post graduation (MSc in Microbiology) at the age of 23 from University of Kalyani and currently doing research activities in the Nanomaterials laboratory of Indian Institute of Technology (IIT), Kharagpur, India. His area of focus is on nanomedicines and its application on cancer and microbial system. He has 2 recent publications in international journals in 2010 and few more under communication. Susmita Pramanik has completed her post graduation (MSc in Biochemistry) from Bangalore University, India and currently residing in Windsor Ontario, Canada. She has 3 publications in reputed international journals.