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“*IN-VITRO* DETECTION OF CANCER CELLS USING LIGAND- ANCHORED LIQUID CRYSTAL MICRODROPLETS”

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***IN-VITRO* DETECTION OF CANCER CELLS USING LIGAND-ANCHORED LIQUID CRYSTAL MICRODROPLETS**

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ABSTRACT

Liquid crystal microdroplets emulsion for the detection of HepG2 cancer cells has been prepared using 4-cyano-4'-pentyl biphenyl (5CB) liquid crystal molecules in presence of sodium dodecyl sulfate as mediator and ligand anchored poly(styrene-*b*-acrylic acid) (PS-*b*-PA) as modifier of liquid crystal/water interfaces. To induce HepG2 cells interactions with liquid crystal microdroplets, the lactobionic acid (G) ligand-anchored poly (styrene-*b*-acrylic acid) (PS-*b*-PA-G) has been synthesized and used to prepare liquid crystal microdroplets emulsion in phosphate buffer saline solution. The interactions of HepG2 cells with liquid crystal microdroplets containing PS-*b*-PA-G were found to be effective in causing configurational transition from radial to bipolar in liquid crystal molecules during a contact time of 3h in PBS solution (pH 7.4). These studies have clearly indicated that lactobionic acid ligand has strong affinity to interact with HepG2 cells receptor to cause configurational transitions in liquid crystal microdroplets emulsion in comparison to maltotronic acid control. The interactions of liquid crystal microdroplets emulsion containing lactobionic acid-anchored PS-*b*-PAA-G also found to be selective to interact with HepG2 cells in presence of control cells such as KB cancer cells and fibroblast cells at pH 7.4 at 30°C. These studies have clearly indicated that liquid crystal microdroplets emulsion containing lactobionic acid-anchored PS-*b*-PA-G can be used to develop biosensor for label free optical detection of HepG2 cancer cells in hepatocellular carcinoma using biological fluid.

Short BIOGRAPHY



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