J Cancer Sci Ther 2014, 6:10
http://dx.doi.org/10.4172/1948-5956.S1.035

OMICS Group Conferences
Accelerating Scientific Discovery

4th World Congress on
Cancer Science & Therapy
October 20-22, 2014 DoubleTree by Hilton Hotel Chicago-North Shore Conference Center, USA

Roles of microRNA in nasopharyngeal carcinoma

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Nasopharyngeal carcinoma (NPC) is a type of head and neck cancer with significantly high prevalence in Southern China. It has a highly invasive in late stages since its special location and lack of specific symptoms. NPC is hardly detected using regular medical examination at the beginning. MicroRNAs (miRs), small non-coding single-stranded RNAs with 19-24 nucleotides length, negatively regulate many target genes expression at the post-transcriptional and/or translational levels, and play a critical role in the initiation and progression of NPC. In this review, we have summarized the information of aberrantly expressed miRs in NPC, their mechanism of action and the relationship to cancer. We found that miRs regulate expression of various oncogenes and tumor suppressor genes, thereby contributing to the modulation of diverse biological processes including proliferation, apoptosis, epithelial to mesenchymal transition and metastasis. Furthermore, the review also found the potential role of miRs as novel biomarkers and their translational applications for diagnosis and therapy in NPC.

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Artemether: A potential agent for the treatment of cervico-uterine and colorectal tumor/cancer

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The artemisinin group of antimalarials have been claimed to possess antitumor/cancer property. Artemether belongs to this group. If it is established to possess antitumor/cancer effect, it may be an exciting substitute for most current anticancer agents. The objectives of this study were to investigate the cytotoxicity behavior of artemether using some cell lines and to explore the suitability of suppositories and alginate beads as dosage forms to deliver artemether to the cervico-uterine and colorectal regions for the potential treatment of cervico-uterine and colorectal cancer/tumor respectively. The cytotoxicity of artemether was evaluated using Hep 2, Tsa 201, tzmbl, Hela, A293 and p815 cell lines following the MTT assay technique. Subsequently, suppositories and alginate beads were formulated. Suppositories were produced using solid dispersion technique involving artemether dissolved in ethanol, soluplus®, polyethylene glycol 4000 and ovucir®. Beads containing artemether, were prepared by dropping aqueous artemether-alginate dispersion into calcium chloride solution. The suppositories and beads were appropriately evaluated. The percent cell viability versus drug concentration plots are shown in the figures below. Hep2, Tsa201, and tzmbl cell types recorded at least 50% cell viability where as Hela, A293, and p815 cell types recorded values that were below 50%, an indication of higher cell toxicity. The loading efficiency, liquefaction time, drug release profiles and bioadhesion of the suppositories to porcine cervico-uterine wall respectively were within acceptable ranges. The beads recorded high drug loading efficiency and high swelling index at alkaline pH. Dissolution studies showed over 60% drug release at pH 7.4 medium. With artemether's established cytotoxicity on Hela cell lines, suppositories and beads proved suitable carriers for its delivery to the vagina and colon for the possible treatment of cervico-uterine and colorectal cancers/tumors respectively.

Biography

Obitte N C completed his PhD at the age of 41 from the University of Nigeria, Nsukka and has recently been awarded the George Forster Postdoctoral Fellowship in Germany. He has over 20 publications in peer reviewed journals to his credit.

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