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IN VITRO EVALUATION OF ANTICANCER AND ANTIBACTERIAL ACTIVITY OF *INDIUM CURCUMIN* AND *INDIUM DIACETYLCURCUMIN*

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Curcumin, a yellow pigment isolated from the rhizomes of *Curcuma longa* (turmeric) has demonstrated wide range of pharmacological activities; including antioxidant, anticancer, anti-inflammatory, antibacterial, and antiviral activities. There are also some reports of therapeutic potential of curcumin for Alzheimer's disease, Parkinson disease, diabetes and hypercholesteremia [1]. Curcumin has low systemic bioavailability, because of its low aqueous solubility and poor stability [2]. Complexation of curcumin with metals improves its stability.Indium curcumin ($In(cur)_3$) and and indium diacetylcurcumin ($In(DAC)_3$) was synthesized and charterized by Mohammadi et al. In this study, the cytotoxic effect of these complexes was assessed on bladder and stomach cancer cell lines by MTT *(*Methyl thiazolyl tetrazolium) assay. The result indicated that both complexes inhibit the cell lines viability to different extent.Exposure of bladder cell to $In(cur)_3$ and $In(DAC)_3$ induces almost 50%-60% cell death.The cytotoxic effect of the indium curcumin complexes on the stomach cell was concentration dependent. Exposure of the stomach cancer cell line to 20 μM concentration of $In(cur)_3$ and $In(DAC)_3$ causes to 61% and 36% cell death respectively indicating indium curcumin is more cytotoxic than indium diacetylcurcumin in MTT assay. Futhermore, antibacterial activity of the complexes against *Bacillus pumilus* and *Escherichia coli*was investigated by dilution test method. The result showed that both complexes inhibit *E. coli* growth in a dose-dependent manner, but indium curcumin is considerably more effective than the other indium complex. The result also indicated that none of the complexes have anibacterial effect against *B. pumilus*. On the whole, it can be concluded that the indium curcumin complexes have anticancer and antibacterial potential.

References

[1] Shen, L.; Ji, H. F. *Trends in molecular medicine.* **2012**, *18*, 138–144.
[2] Mohammadi, K.; Thompson, K. H.; Patrick, B. O.; Storr, T.; Martins, C.; Polishchuk, E.; Orvig, C. *Journal of Inorganic Biochemistry.* **2005***, 99*, 2217-2225.