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## Assessment of the DNA damaging effects of irinotecan and delta-9-tetrahydrocannabinol in Wistar rat brain cells: A pilot study

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Irinotecan (IRI) represents one of the most important antineoplastic drugs used in the chemotherapy of metastatic colorectal cancer. Its use is accompanied by various adverse effects such as diarrhoea, myelosuppression and hepatotoxicity. To diminish side-effects, some cancer patients use *Cannabis sativa* preparations, rich on delta-9-tetrahydrocannabinol (THC). The potentially harmful interactions resulting from co-administration of chemotherapy with biologically based complementary therapies have not yet been explained well, which motivated us to conduct a study on a Wistar rat model using a THC dose equal to the one found in commonly used illicit preparations. Male rats were concomitantly exposed to IRI (at 100 mg/kg b.w, administered once i.p.) and THC (administered repeatedly for 3 and 7 days per os at 7 mg/kg b.w). Single IRI, THC and control groups were studied in parallel. We estimated changes in brain weight caused by the treatments and evaluated the level of primary DNA damage in the brain cells of exposed and control rats using alkaline comet assay. Combined treatment slightly diminished brain weights compared to controls after both exposure times. The 3-day treatment resulted in significantly increased levels of DNA damage in brain cells of rats given single IRI, which worsened after concomitant exposure to THC. Single THC caused a minor increase of DNA damage compared to control rats. After the 7-day treatment, levels of DNA damage in rats given single IRI and IRI+THC slightly lowered, but were still significantly higher than in control rats. Prolonged exposure to THC resulted in a further increase of DNA damage. The obtained results speak against the concomitant use of THC with IRI, due to the possible enhancement of brain damage, but these findings have to be proven in forthcoming studies using much wider dose ranges of both compounds.

### Biography

Nino Fuchs is a PhD student at the University of Rijeka, Department of Biotechnology. He is appointed as a MD at University Hospital Centre Zagreb, Croatia. His professional interest is focused on plastic and reconstructive surgery. His research interest is focused on the interactions of antineoplastic drugs with herbal supplements on animal experimental models.

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