

# **Immunotoxicity: drug-induced and herbal-induced adverse reactions, cannabis, opioid interactions**

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## **Abstract:**

### Background:

Drug-induced liver injury (DILI) and Herbal-induced liver injury (HILI) as well as drug-herbal-nutraceutical interactions can have two mechanisms direct or idiosyncratic toxicity. Direct toxicity produced by a substance is dose dependent and dependent of the frequency of the exposure to the substance. Idiosyncratic reactions are categorized as hypersensitivity syndrome reactions (HSR) and are depended on the sensitivity of the specific individual. The interaction of therapeutics with phytocannabinoid ( different strains, chemovars, entourage and molecules) may lead to adverse reactions.

### Aims:

- 1- to report several cases of severe HSR due to drugs and herbs.
- 2-to present both clinical and laboratory evidence implicating mitochondrial toxicity and an immune response leading to liver toxic events.
- 3-to present some clinical trials with medical Cannabis targeting pain, gastro-intestinal disorders, palliative care, neurological disorders.
- 4-to assess safety of cannabinoid medication: Cannabis vs. opioids.

I will present cases of liver injury due to acetaminophen toxicity in which there is an inflammatory response. Also I will present cases of individuals hospitalized due to ingestion of tea and protein-shake and homeopathic products. The medical use of cannabis versus the recreational use in the presence or absence of alcohol or opioids will be interpreted.

In conclusion, therapeutics, herbal remedies might produce toxicity. Interaction between the therapeutics and drug of misuse are leading to drug-adverse reactions.

## **Bio:**

Dr Manuela Neuman teaches clinical and experimental toxicology and pharmacology at the University of Toronto, Medical School, Canada. Dr. Neuman supervised several M.Sc., and Ph.D. theses as well as post-doc fellows and research projects for Medical Physicians. She is also in charge with Ph.D. international students (Cuba, Israel, Romania) as well with Pharmacy and Medicine exchange M.Sc., international students from France and Medical fellows from Israel, Brazil, Cuba, Romania and Argentina. She is the recipient of research grants fostering

collaboration with researchers in United States, France, Italy, Israel, Germany, Cuba and Romania.

Dr. Neuman is the founder of the In Vitro Drug Safety and Biotechnology. Dr. Neuman is author and co-author of more than 210 peer-reviewed manuscripts and ten invited textbook chapters. Dr. Neuman has been invited to present more than 250 conferences in several countries. Dr. Neuman is an internationally known clinical biochemist, immunologist, toxicologist, virologist and investigative pathologist who is known for her pioneer work in drug-induced organ damage as well as alcoholic and non-alcoholic steatohepatitis. Her research also revealed the pathogenetic importance of nutrition (vitamin B6 deficiency, fat high in polyunsaturated fat), cyclic blood alcohol levels, bile duct metaplasia, CYP2E1, metabolome and epigenetics in experimental and clinical alcoholic, autoimmune and viral liver disease. These studies have established modern conceptual understanding of drug induced and alcohol-induced pathogenesis which is elegantly described in many of her articles.

Presently Dr. Neuman serves as the Chair of Clinical Toxicology and Drugs of Abuse Committee of the International Association of Therapeutics, Drug Monitoring and Clinical Toxicology.