Cannabis sativa and Type 2 Diabetes – Is There a Link?

Chair: ***Andrea Daly***

A Review of Current Research on the Relationship between *Cannabis sativa* and Type 2 Diabetes

Marcia Williams

The International Diabetes Federation reported that there are 202 000 cases of diabetes in Jamaica and that the prevalence rate among adults is 11%. They also reported that the estimated cost per person for treating diabetes in Jamaica is approximately US$419 per annum. Currently, the pharmaceuticals used in the treatment of this chronic debilitating disease are imported. Development of a local pharmaceutical agent in the treatment of this disease would significantly reduce Jamaica's foreign exchange expenditure. Evidence has shown great prospects in medical marijuana.

In 2013, researchers at Harvard Medical School and the Beth Israel Deaconess Medical Centre in Boston investigated the relationship between marijuana use and fasting insulin, glucose and insulin resistance in a sample of 4657 male subjects. The result of this research indicated that use of marijuana decreased the risk of developing Type 2 diabetes mellitus. This study corroborates laboratory studies which have demonstrated the role of the cannabinoid 1 and 2 receptors in stimulating pancreatic beta cells. A review of the relevant studies is presented.

Medicinal Cannabis and the Morbidity Spectrum of Diabetes

Donald Land

Diabetes mellitus causes changes and interruptions in cell metabolism that are manifested in numerous co-morbid conditions such as headache, diabetic dermadromes, foot ulcers, neuropathy and decline in cognitive function. *Cannabis sativa* L produces about one hundred different "cannabinoids", phytochemicals derived from or related to cannabigerol produced in the trichomes of the plant. While tetrahydrocannabinol (THC) and cannabidiol (CBD) have received the most attention for treatment of human disorders using cannabis, there are numerous other cannabinoids with medicinal effects proven with *in vivo* or *in vitro* models. Advanced testing methods allow the detection of a wide range of cannabinoids and allow the discovery or development of plant varietals that produce significant amounts of "minor cannabinoids", as these other compounds are often called. A review of observed minor cannabinoids and the prospects for significant scale production in the near future will be discussed as they relate to specific diabetic co-morbidities.

Jamaica's Green Gold Profile: An Analytical Approach

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The recent decriminalization of Cannabis spp has made more rigorous analysis of Jamaican grown strains more feasible. Our study therefore looked at over 50 cannabis plants, which were voluntarily submitted for analysis. Tested samples utilized the raw plant material and plant extracts. Quantitative analysis was conducted using the QuantaCaan 2 (Steep Hill Labs) and HPLC (Waters) instruments.

The initial testing of the raw plant material was conducted with the QuantaCaan 2, which provided data on both the pre-decarboxylated and decarboxylated cannabinoid levels; ratio of tetrahydrocannibinolic acid to cannabidiolic acid (THCA:CBDA) and tetrahydrocannabinol to cannabidiol (THC:CBD), respectively. Our analytical findings indicated the presence of chemotypes I, II and III in Jamaica. However, one sample could possibly be classified as chemotype IV or V. According to Aizpurua-Olaizola *et al* (2015), Cannabis spp that are classified as drug-type are classified based on the ratio of cannabinoids present – THCA:CBDA. Those classified as chemotype I had a THCA:CBDA ratio >> 1.0, chemotype II 0.5–2.0 and chemotype III << 1.0. Several strains were identified which had varying levels of THC and CBD within the plant material. The data revealed an average THCA content of 11.45% and CBDA of 6.55%. Of the samples analysed, forty-four plants were found to be chemotype I, seven plants were chemotype II and three plants were chemotype III. The highest THCA content was recorded at 19.8% with less than 2% CBDA, while the highest CBDA content recorded was 10.3% with less than 2% THCA. The data implied that the primary chemotype available within the Jamaican landscape may be chemotype I.