Is there a role for Cannabidiol in the treatment of Children's Brain Tumours?

Project Update November 2019

Cannabinoid Funders, and Researchers at The Brain Tumour Summit Event in November 2019, Nottingham.

L to R: Stephen Frost (Parent and founder of Make William Well), Dr Lisa Storer (Senior Experimental Officer working on the project), Emma Pearson (University of Nottingham, Senior Development Manager (Health)), Professor Richard Grundy (Principal Investigator on the Cannabinoid Research Study), Mary and Robbie Burton (Astro Brain Tumour Fund)

Make William Well has generously supported a research project at the Children's Brain Tumour Research Centre examining "Is there a role for Cannabidiol in the treatment of Children's Brain Tumours".

We know that Cannabidiol (CBD) is widely used by brain tumour patients, sometimes with considerable success. But, we need to objectively understand how CBD affects the cells, and why the results patients and families are reporting occur. This knowledge is essential in order to determine what the therapeutic dose of CBD might be. Without this, Clinicians or families may inadvertently be too conservative or liberal in their dosage, and not achieve optimum results for the patient.

Laboratory Studies

George Lockwood, Research Technician on the CBD project

We last provided an update to Make William Well in July 2019. Since our last update, 3 studies that we highlighted have now been concluded. These are:

1) Examining to what extent the presence or absence of oxygen (the latter mimics the conditions within the brain) in tumour cells treated with CBD, has on markers within the cell which indicate the beginning of the process of cell death.

2) Some patients are taking cannabis oil as an adjuvant therapy for their brain tumour. The treatment is to take the oil for CBD 3 days on, 3 days off. It is not yet understood how this pulsed action affects tumour cells. We have replicated this treatment on our laboratory cells, to understand what impact it has on the cells.

3) Investigated in further detail how CBD affects the cells receptors, so that it can be better understood the effect the drug has on tumour cells.

This research could have considerable clinical benefits, and therefore it is very important that any conclusions we draw are able to stand up to international scientific scrutiny. To achieve this, we are now in the process of detailed examining all of our data from the project. This process takes several months, and we expect to make firm conclusions in Spring 2020.

Once completed, we will submit our results for scientific publication. With this in mind, we are submitting abstracts to major scientific conferences, as these events are a key route to disseminating the knowledge we have gained to an international audience of scientists and clinicians.

International Knowledge Sharing

Although our laboratory phase has currently moved to analysis, we are still developing our international collaborators and planning the next stage of our studies.

Professor Richard Grundy visited The University of Western Australia in September to learn first-hand about their CBD research studies focussing on medullblastoma. Professor Grundy spent time with Dr Clara Andradas Arias, PhD Post-doctoral Research Officer, Telethon Kids Institute, Perth, Western Australia. Clara is an international Post-doctoral Researcher in the Brain Tumour Research Lab at Telethon Kids Institute. She completed her PhD in Spain, at the Complutense University of Madrid, in a world-leading laboratory focused on the role of the endocannabinoid system in cancer physiopathology and the use of cannabinoids as potential anti-tumour agents. Clara continued her career at MD Anderson Cancer Centre Madrid, identifying alternative therapies for HER2+ breast cancer patients that are resistant to standard therapy. In 2017, she moved to Australia to join the Brain Tumour Lab at Telethon Kids Institute, where their search focuses on understanding paediatric

brain tumours biology and finding more effective treatments to improve survival rates and quality of life for patients. Specifically, Clara works in a collaborative project with Zelda Therapeutics, studying the potential anti-cancer effects of cannabinoids in childhood brain tumours. Clara has a broad expertise in. cancer signalling, pre-clinical cancer models, drug therapy and cannabinoid research.

The CBTRC's CBD research has focussed on ependymoma, and Paediatric High-Grade Gliomas, and this international collaboration has been an invaluable opportunity to share data into how CBD affects cells in other types of paediatric tumours, with the data to date looking consistent across both laboratories. To share the knowledge more widely, Clara visited Nottingham in October and presented to researchers in Medicine, Pharmacy, and paediatric oncology Clinicians and Nurses.

Further Studies

Whilst our current focus is on analysis, we know there is more research that needs to be conducted to truly understand CBD and how it can most effectively be used to treat paediatric brain tumours. We have recently applied for two further MSc students to join us, potentially in February 2020. These projects will focus on further understanding the impact of the current adjuvant usage of CBD by patients on tumour cells, and further understanding the processes and changes that CBD had on cells in conditions with and without oxygen. Combined, this will provide further insight into how CBD interacts with tumours. Meanwhile, to start taking this research to patients, Dr Madhumita Dandapani, Clinical Associate Professor and Consultant Paediatric Neuro oncologist at Nottingham University Hospitals Trust is developing a Ketogenic Diet & CBD Clinical Trial application, for a funding application in 2020.

Once again, we would like to thank the supporters of Make William Well for their significant contribution allowing us to study the impact of an emerging therapy for children with brain tumours, and how it can be used for maximum impact, with minimum harm.