

Ground-breaking MGC Pharma Research Highlights Effectiveness of Cannabinoids on Brain Cancers

A
S
X

R
E
L
E
A
S
E

MGC Pharmaceuticals Ltd (ASX: MXC, 'MGC Pharma' or 'the Company'), a European based 'Seed to Pharmacy' bio-pharma company focused on developing and commercialising cannabinoid derived medicines, is pleased to announce new facts on the pre-clinical research which highlighted the positive impact of using specific cannabinoid formulations in the treatment of glioblastoma, the most aggressive and so far therapeutically resistant primary brain tumour. This research, conducted in collaboration with the National Institute of Biology and University Medical Centre Ljubljana, is a major scientific breakthrough for the Company in successfully applying cannabinoid compounds on cancerous cells.

Key Highlights:

- Recent report on pre-clinical research focuses on the development of cannabinoid formulations specifically tailored for the effective treatment of high grade brain tumours
- Represents the first research to test the effects of cannabinoid compound formulations on cancerous cells using tissues taken directly from a patient
- This report confirms that cannabinoid preparations can successfully inhibit tumour viability and also cause the significant fraction of glioblastoma cells to die i.e. apoptosis after short time after their application
- Most importantly, cannabinoid formulations are shown to be able to target glioblastoma stem cells that are considered to be the "roots" of the disease and the critical target in oncology therapy
- These multi compound cannabinoid formulations are the intellectual property of MGC Pharmaceuticals
- A diagnostic platform for glioblastoma patients has been developed that is able to predict the response of a tumour to selective multi-cannabinoid compound formulations, meaning that a targeted treatment plan can be most efficiently implemented

Roby Zomer, Co-founder and Managing Director of MGC Pharma, commented: "This research is a major breakthrough for the treatment of tumours with cannabinoid-based formulations and has wider implications on different cancer treatments. The full research report successfully shows that compounded cannabinoid formulations can have a positive effect on the treatment of glioblastoma, reducing the growth of a tumour cell and killing the cancerous stem cells. We are now creating a cannabinoid compound matrix which we can utilise to target a wider range of cancers and significantly advance our R&D capabilities.

"We are a cannabinoid focussed pharmaceutical company working with the international scientific community, and this research, conducted in collaboration with the National Institute of Biology and University Medical Centre Ljubljana, highlights the success of this partnership strategy.

“We will continue on this path to broaden our cannabinoid cancer research programs, with further involvement of leading medical research institutions, including the Royal Melbourne Institute of Technology and The Hebrew University of Jerusalem, which will have material implications for future trials targeting cancer treatments and maintaining our premier position within the cannabinoid focussed pharmaceutical sector.

“We continue to develop our seed to pharmacy strategy, creating pharmaceutical based formulations in targeting medical conditions, including cancers, epilepsy and dementia, and we look forward to increasing our revenues as we increase sales and capitalise on our unique position in the market. I look forward to updating investors on developments including progress from our new Maltese commercial hub, as we look to build our commercial platform and shareholder value.”

Additional Information on the Report

The research for this full report was undertaken by MGC Pharma in collaboration with the National Institute of Biology and University Medical Centre Ljubljana on the effectiveness of cannabinoid formulations in the treatment of glioblastoma. The results of the extensive tests have indicated that there is a strong translational component of the preclinical studies that the research participants believe will have wider implications for the use of cannabinoid compounds for the treatment of brain and other types of cancer.

Individualized, informed treatment of patients is an emerging trend in medicine and the work for this research included testing cannabinoid preparations in compositions that can be adjusted to individual patients. In this instance it involves the testing of fresh tumour tissues, obtained from patients after therapeutic surgical removal of the tumour, to determine the optimal cannabinoid preparation for the effective treatment of the remaining cancer - either alone or in combination with chemotherapeutic temozolomide that is used in the patients with certain epigenetic set-up.

MGC Pharma’s research has demonstrated that selective cannabinoid preparations inhibited tumour growth in vitro and could also induce apoptosis of glioblastoma cells. Furthermore, a diagnostic platform for glioblastoma tumours has been developed to predict the response of the tumour to selective cannabinoid preparations, based on their subtype which is defined by the genetic fingerprint of the tumour. The research team also investigated if the response depends on the variety of cannabinoid receptors expressed on the glioblastoma cells surface or not, and if so, which out of five most common receptors found in cancer cells, might be of key relevance. This could potentially lead to a relatively simple diagnostic prediction process for cannabinoid therapeutic potentials.

Key highlights of the research included the cannabinoid formulations synergistic effects on glioblastoma stem cells. Cancer stem cells are the origin of the disease and the glioblastoma stem cells are generally known as most critical targets to kill, as the “roots of the weed” – with any kind of therapy/chemo/irradiations, that the doctors apply. When the glioblastoma stem cells are isolated from patients’ glioblastoma, the fraction of tumour tissue obtained from neurosurgeon at the operation and tested for response on cannabinoid preparations, it enables the most lethal cannabinoid combination treatment to be determined, leading to the inhabitation of tumour growth as well as potentially preventing a relapse. This is exclusively due to the glioblastoma stem cells and at present we can confirm that these are abundantly expressing two most common cannabinoid (THC mostly) receptors called CB1 and CB2, indicating that THC would most likely be efficient in inhibiting stem cells activities (Figure 1- below).

Figure 1

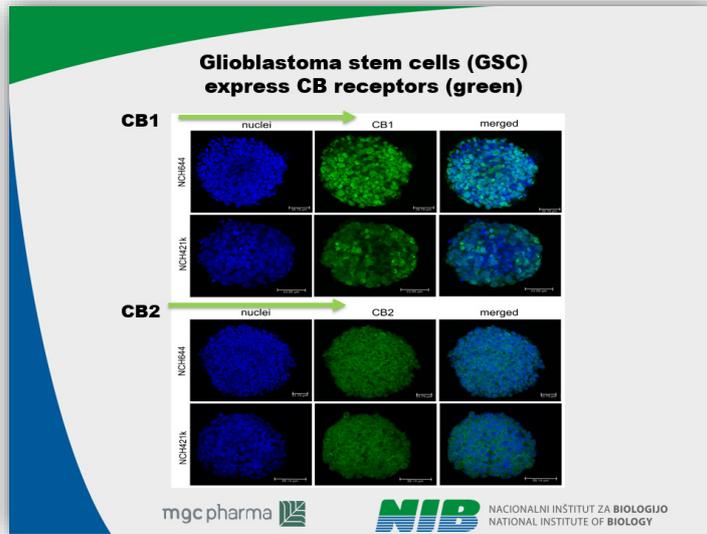


Figure 2

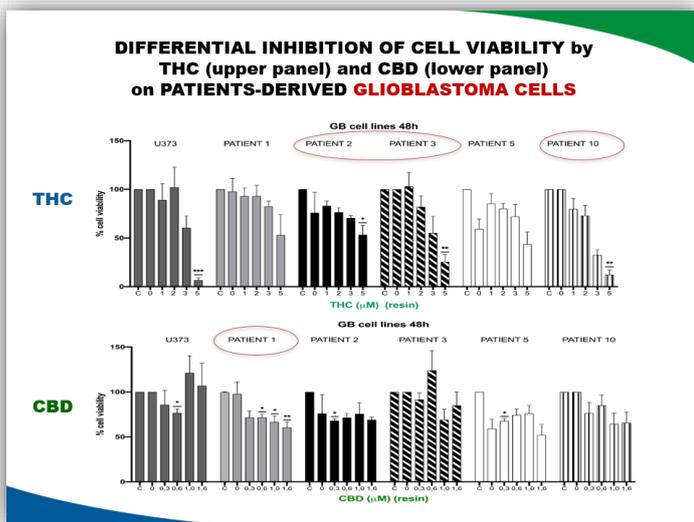
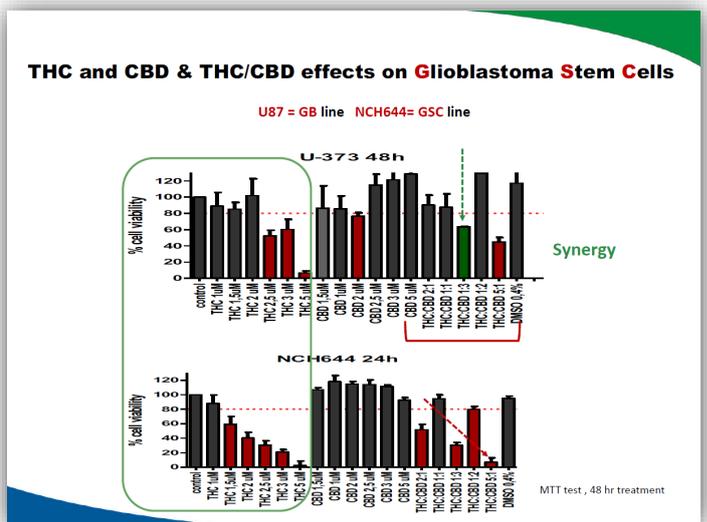


Figure 3



Abstract from the Research

The following abstract was taken from the report by Prof. Tamara Lah Turnšek from the National institute of Biology, Department of Genetic Toxicology and Cancer Biology Slovenia on the research.

Cancer is a multimodal disease that could not be targeted by a single therapy, as has been demonstrated in particular in brain tumours, including advanced stage glioblastoma, a highly aggressive and therapeutically non-responsive tumour in humans. The modern treatment modalities, surgical removal, irradiation and chemotherapy can be supported or even replaced by adjuvant treatment strategies, including cannabinoids.

Evidence has demonstrated that cannabinoids inhibit growth in invasiveness of tumour cells and continues to be solidified, based on cellular experiments *in vitro* and in animal studies, but unfortunately still not sufficiently from human clinical studies. In addition, due to large genetic micro-heterogeneity and further epigenetic transformation of recurrent glioblastoma, it is hard to predict how an individual patient will respond to cannabinoid treatment.

The research aimed to examine the individualized patients' tumour response to the two most active cannabinoids, i.e. THC and CBD in terms of their potential synergistic effects on cell viability and apoptosis. As glioblastoma are classified into three subtypes that differ significantly in their genetic fingerprints, patients' survival rate and chemo- and radio-resistance, the research is correlating the *in vitro* response to the individual tumour subtype. In addition, the levels of at least two cannabinoids CB1 and CB2 differ significantly among the patients, so we also need to explore whether these may determine the response to the tumour *in vitro* more or less than to the tumour subtype. This data should reveal how to personalize potential cannabinoids therapy to be most effective.

--Ends--

For further information, please contact:

Media Enquiries

Justin Kelly
Media and Capital Partners
+61 408 215 858
justin.kelly@mcpartners.com.au

UK IR/Media Advisors

Gaby Jenner/ Catherine Leftley
St Brides Partners Ltd
+44 (0) 207 236 1177
gaby@stbridespartners.co.uk
catherine@stbridespartners.co.uk

MGC Pharmaceuticals Ltd

Brett Mitchell
Executive Chairman
+61 8 6382 3390
info@mgcpharma.com.au

About MGC Pharma

MGC Pharmaceuticals Ltd (ASX: MXC, OTCQB: MGCLF) is an EU-based BioPharma company with many years of technical clinical and commercial experience in the medical cannabis industry. The Company's founders were key figures in the global medical cannabis industry and the core business strategy is to develop and supply high quality cannabinoids-based pharmaceuticals products for the growing demand in the medical markets in Europe, North America and Australasia.

Follow us through our social media channels    

About National Institute of Biology (NIB)

National Institute of Biology (NIB) is the largest independent Public Research Institution for Life Sciences in Slovenia. The Institute was established by the Government of the Republic of Slovenia in 1960. The basic activity of the Institute has been and continues to be basic, developmental and applicative research in the fields of biotechnology, biophysics, biomedicine and system biology. NIB works in close cooperation with affiliated higher education and research institutions in Slovenia and abroad. This synergy ensures that the knowledge produced at the Institute is widely accessible to the society through education and outreach activities and is beneficial to the economy by being transferred into practice.