

## Poster Presentations

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02P-1

### The Scientific Validation of EG Wellness Cerasee-Ginger Blended Formulation as a Hypoglycaemic Tea for Persons with Diabetes Mellitus

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An early morning or midday cup of tea is entrenched in the Jamaican culture, as it is transmitted from generation to generation. The efficacy and effectiveness of these herbal teas have also significantly contributed to the medicinal plant knowledge needed to instigate a scientific validation *via* research.

Cerasee and ginger have long been used as anti-diabetic agents, with their bioactive hypoglycaemic components being charantin, momordenol and mormordicilin from cerasee and gingerol from ginger. However, the effectiveness of the preparation method used would significantly affect the level of effectiveness. As a result, the Biotech R&D Institute (BRDI) has embarked on validating the wellness herbal tea blend of cerasee and ginger using animal models.

The crude polar and non-polar extracts of the blended formulation of plant material were dried *in vacuo* and tested using the oral glucose tolerance test *in vivo* with Sprague-Dawley rats.

The polar extract showed little effect on lowering the blood glucose concentration after the glycaemic peak ( $6.98 \pm 1.3$  mmol/L) when compared to the control ( $7.64 \pm 1.5$  mmol/L). However, the non-polar extract showed a more significant effect in lowering the blood glucose concentration in the post prandial region of the curve when compared with the control ( $4.8 \pm 1.18$  mmol/L [non-polar],  $5.81 \pm 0.69$  mmol/L [polar] vs  $5.8 \pm 0.73$  mmol/L, respectively). The results indicate that the EG (Eden Gardens) wellness medicinal plant blend contains more significant hypoglycaemic ability when prepared at high temperature, such as decoction rather than infusion, to also extract the non-polar components. It is therefore recommended as a diabetic tea, in which there are no reported cases of interaction between the above mentioned herbs and common diabetic agents such as metformin, insulin and other hypoglycaemics currently on the market. The herbal blend of cerasee and ginger by EG wellness has better hypoglycaemic effect when

prepared as a decoction for teas used to lower the blood glucose concentration.

### The Effect of Inositol Hexakisphosphate (IP6) and Inositol Combination on Renal and Hepatic Function and Antioxidant Status in Streptozotocin-induced Type 2 Diabetes Mellitus Sprague-Dawley Rats

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**Objective:** Diabetes mellitus (DM) results in elevated reactive oxygen species and reduced protective abilities of endogenous antioxidant systems. This study examines the effects of combined inositol hexakisphosphate (IP6) and inositol on markers of liver and kidney damage, lipid peroxidation and antioxidant activities in Type 2 DM rats.

**Methods:** Five groups of Sprague-Dawley rats were studied. Initially, six rats were fed normal diet (non-diabetic control; NC), while 24 rats were fed high fat diet (HFD) for four weeks. Diabetes was induced in 18 of the rats fed HFD by intravenous administration of streptozotocin dissolved in citrate buffer. The diabetic rats were separated into three groups, namely: IP6 and inositol combination (IP6+INO), glibenclamide (Glib) and diabetic control (DC). The non-diabetic group fed HFD was classified as high fat control group (HFC). The control groups were injected with citrate buffer only. For the final four weeks of the experiment, all rats were fed normal diet and given respective treatment regimes. Hepatic and renal lipid peroxidation, antioxidant status as well as serum alanine transaminase (ALT), aspartate transaminase (AST), blood urea nitrogen (BUN), uric acid and creatinine concentration were assessed.

**Results:** Combined IP6 and inositol supplement significantly lowered serum ALT and up-regulated hepatic superoxide dismutase, catalase and glutathione activities while increasing renal catalase activity compared to the diabetic control. Hepatic and renal lipid peroxidation levels were, however, unchanged.

**Conclusion:** Consumption of combined IP6 and inositol treatment resulted in the preservation of liver cell integrity and improved antioxidant status in Type 2 DM rats.

## **The Effects of Biomagnetic Therapy on Non-fasting Blood Glucose Levels in Type 2 Diabetic Rats**

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This study was done to determine the effects of biomagnetic therapy on non-fasting blood glucose levels (NFBG) in Type 2 diabetic mellitus (T2DM) rats with or without a low glycaemic index influenced (LGI) diet. For a gender unbiased research, both male and female streptozotocin-induced T2DM Sprague-Dawley rats (32 each) weighing  $195.5 \pm 27.7\text{g}$  were assessed, with and without biomagnetic therapy using 5000 gauss magnetic bracelets. Non-fasting blood glucose levels were measured in the blood collected from the tail, once weekly for 16 weeks using a portable glucometer (Glucolab Blood Glucose Monitoring System).

Results showed that there was a significant ( $p < 0.05$ ) and consistent reduction of NFBG over the experimental period for diabetic groups that were under the influence of biomagnetic therapy; fed low GI drink and a combination of both biomagnetic therapy and low GI drink; with average blood glucose levels for the final month being  $8.35 \pm 1.06\text{ mmol/L}$ ,  $6.75 \pm 0.79\text{ mmol/L}$  and  $6.68 \pm 0.20\text{ mmol/L}$ , respectively as compared to the non-treated diabetic rats (control) which averaged blood glucose levels of  $31.39 \pm 3.94\text{ mmol/L}$ .

Results were compared to known goal blood glucose levels for diabetics. Biomagnetic therapy can facilitate the maintenance and management of T2DM by lowering NFBG as groups exposed to the biomagnetic therapy showed blood glucose levels trending to that of normo-glycaemic levels of 4.0–7.7 mmol/L.