# Poster Presentations

**02P − 1**

## Ocular Finding in a Family with Diabetes Mellitus Type MODY

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**Objective:** To investigate the ocular complications in a family with diabetes mellitus type MODY.
**Introduction:** The diabetes mellitus type MODY is a monogenic variant of diabetes that has a behaviour similar to diabetes Type 2; it occurs in young individuals, frequently before age 25 years and is characterized by a secretory defect of insulin that can be moderate or severe, according to the gene type. Therefore, the control of these patients will depend on the magnitude of the secretory defect and its treatment can require the administration of insulin in a similar way to the patient's treatment with diabetes Type 1.
**Material and Method:** This was a descriptive study in a Venezuelan family, with diabetes mellitus type MODY, seen at the International Center of Retinitis Pigmentosa, Camilo Cienfuegos in Havana City, Cuba. Clinical and ophthalmological examinations were performed, the genealogical tree of the family was mapped and a genetic research of the family was also done.
**Results:** We found 27 members of the family affected by diabetes mellitus type MODY, with different degrees of severity, with a typical pattern autosomal dominant heredity and a penetrance of a hundred per cent. Family consanguinity was not observed.
**Conclusions:** The different genes that cause this type of diabetes and epigenetic factors lead to a difference in the severity and ocular findings between families and between members of the same family.

**02P − 2**

## Compounds Isolated from the Eucalyptus Showing Hypoglycaemic and Hypotensive Effects

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Within the Caribbean, diabetes mellitus is the leading cause of secondary blindness, and in Jamaica, it is one of the leading causes of death. Plant remedies are predominantly used in under-developed regions, thus, research into alternative treatment for diabetes is imperative for the development of new oral hypoglycaemic and hypotensive agents. As a result, this investigation aims to validate the ethnomedicinal use of *Eucalyptus sp* in the treatment of hyperglycaemia and hypertension.

The active hypoglycaemic and hypotensive compounds (FR1DBY, FR1DBE, FR2DBS and FR2DBW) were isolated from the Eucalyptus after purification and bioassayed using the oral glucose tolerance test (OGTT) and *via* the CODA-6 non-invasive machine for the hypotensive analysis. These isolated compounds were significantly lower than the control ($p < 0.05$) when administered to the rats orally at 700 and 900 mg/kg bodyweight (BW). The structures were elucidated by spectroscopic analysis and a comparison was carried out using metformin and captopril, known hypoglycaemic and hypotensive agents, respectively. The compounds showed similarities in reducing the blood glucose concentration, as FR1DBY and FR2DBW elicited the same effect as metformin ($p = 0.36$ and 0.94, respectively at the 90-minute interval). Also, the comparison done with captopril (30 mg/kg BW) showed similar lowering of the blood pressure ($p = 0.002$) at the 15-minute interval.

The active hypoglycaemic compounds isolated from Eucalyptus were able to lower the blood glucose level, similar to metformin and also to lower the blood pressure, similar to that of captopril.

**02P − 3**

**Cost of Care of Type 2 Diabetes among Patients Who Visited the University Hospital of the West Indies in 2006**

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**Aim:** To estimate the cost of Type 2 diabetes mellitus (T2DM) and the contribution of obesity to this cost among patients who visited the University Hospital of the West Indies (UHWI) during 2006.

**Method:** This study used the cost-of-illness approach to estimate the cost of care for T2DM in a hospital setting. Cost and service utilization data were collected from the hospital records of all patients who visited the UHWI during 2006 for T2DM. Patients were chosen if they visited for T2DM and were between the ages of 15 and 74 years and, if females, were not pregnant during that year. Costs were categorized as direct or indirect. Direct costs included those for drugs prescribed to patients, consultation visits (emergency and clinic visits), hospitalizations, allied health services, diagnostic and treatment procedures. Indirect costs included premature mortality, disability (permanent and temporary) and absenteeism. Indirect costs were discounted by 3%.

**Results:** This study estimated the cost of T2DM at US$ 2 666 338.46 and the cost attributable to obesity at US$ 557 775.44 (21% of total cost) for 2006. The direct cost was estimated at US$ 1 714 614.27 with female patients accounting for 64% of this cost. Indirect cost was estimated at US$ 951 724.19 with male patients accounting for 66% of this cost. Seventy-five per cent of the cost attributable to obesity was accrued by female patients.

**Conclusions:** This study has shown the high cost of care for T2DM and the potential economic losses that can occur as a result of chronic diseases. Despite Jamaica being a developing country, the costs of chronic diseases are relatively high.

**02P − 4**

**Effects of Vitamin C, Cysteine and Glutathione Administration with S-nitrosoglutathione on Glycaemic Control in Sprague-Dawley Rats**

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According to the Statistical Institute of Jamaica (2009), demographic statistics showed that diabetes mellitus was ranked as the third leading cause of death overall for the period 2009/2010.

S-nitrosoglutathione (GSNO), a nitric oxide donor drug and a known vasodilator, is produced naturally in the body. Studies have shown that vitamin C accelerated the decomposition of GSNO causing a hyperglycaemic effect in rats. This study investigated the effect of separately administering reducing agents such as vitamin C, cysteine and glutathione with GSNO on glucose metabolism in normoglycaemic rats. This was carried out *via* the oral glucose tolerance test (OGTT). S-nitrosoglutathione was administered intravenously at 12.5 mg/kg bodyweight (BW) immediately after a fasting blood glucose sample was taken (t = 0 min) and thirty minutes later the reducing agents vitamin C, cysteine or glutathione were administered intravenously at 30 mg/kg BW (t = 30 min). Another fasting blood sample was obtained at t = 60 minutes after which a glucose load of 1.75 g/kg BW was administered orally. Post-prandial glucose concentrations were obtained at thirty-minute intervals for the next 2 ½ hours. Vitamin C and GSNO caused a significant increase in postprandial blood glucose concentration compared with the control, saline ($p < 0.05$). Conversely, the blood glucose concentration for cysteine and GSNO as well as glutathione and GSNO were similar to the control and not significantly different ($p > 0.05$). Cysteine administered on its own, however, gave a significant postprandial hyperglycaemic effect.

The clinical relevance of these findings suggests that hypertensive diabetic patients on GSNO treatment who may be taking vitamin C supplements are possibly more predisposed to further reductions in their glycaemic control. Vitamin C on its own, however, did not affect blood glucose concentration in the rats studied which was similar to the control, saline ($p = 0.05$). S-nitrosoglutathione and glutathione supplementation would be the most favourable in maintaining glycaemic control, which showed no effect on blood glucose concentration in the Sprague-Dawley rats in this study.

# Notes