



from Bingham University with ages ranging from 18 to 27 years for the first phase while the remaining 16 subjects with ages ranging from 29 to 48 made up the second phase. Both male and female subjects were selected and their weight and height data were measured respectively. Fasting blood sugar for all the participants was carried out after 12 hours of no meal intake. Blood pressure was measured before/after every meal and *Moringa oleifera* intake. Then the first phase participants were further subdivided into 5 groups of which Group A was the control group and did not receive any *Moringa oleifera*, Group B were firstly given a meal and 2 hours later, they received *Moringa oleifera*. Group C received *Moringa oleifera* firstly and after 2 hours, they received a meal. Group D was only given meals, while Group E received *M. oleifera* without any meal. The Second Phase participants were divided into 2 of which Group F received low-dose (37.5 mg/kg) of *Moringa oleifera* while Group G received high-dose (75 mg/kg) *Moringa oleifera*.

**Results.** Two hours after *Moringa oleifera* intake, the blood pressures of the groups B, C, E, F and G participants were drastically decreased. The thiocarbamate and isothiocyanate glycosides contained in the *M. oleifera* extract are said to have brought about the hypotensive effect. At the same time, in this study, it was revealed that no significant hypoglycemic effect was seen in normoglycemic patients fasting glucose levels. In participants of the second phase, their glucose fasting blood glucose decreased after 14 days of *Moleifera* intake. Decrease in blood glucose was 7.49 % for Group F and 5.45 % for Group G.

**Conclusions.** Based on these trials, it can be deduced that *Moringa oleifera* intake proved effective in decreasing blood pressure in healthy individuals. It can also lower blood glucose in hyperglycemia over a couple of hours. The hypoglycemic effect here is independent of the dose of *Moringa oleifera* taken. *Moringa Oleifera* has therefore proven to be an option as adjunctive therapy in the treatment of diabetes mellitus and concomitant hypertension.

## FENUGREEK CONSUMPTION AS A COMPONENT OF NONPHARMACOLOGICAL TREATMENT OF DIABETES MELLITUS TYPE 2: INDIA EXPERIENCE

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**Background.** Fenugreek (*Trigonella foenum-graecum*) is a commonly used herb as a traditional and modern Ayurvedic remedy in many of the regions of India and as a regular intake with food in many cultural background families. Despite the lack of modern scientific knowledge, the essence of fenugreek was found by the experts of homeopathic workers. Modern science has found that fenugreek is packed with a substantial number of phospholipids, glycolipids, oleic and linoleic acid, choline, vitamins, thus the seeds & leaves of fenugreek possesses potential anti-oxidant, glucose lowering, and nephroprotective substances, also mediate as a special membrane stabilizer because of their content of furostanolic saponins. Its action in lowering glycemia is almost similar to the actions of insulin, which is present in the amino acid 4-OH, which likely releases insulin by pancreatic cells as if sensed by glucose metabolism.

The extract of fenugreek phosphorylates a number of proteins, the subunits of insulin receptor p85 PI3-K and substrate in cells, including phytochemicals such as flavonoids (Naringenin), alkaloids (Trigonelline), coumarins, scopoletin. It is used as a raw source for anti-diabetic properties as an extract while taken orally. The biochemical, histochemical and molecular level actions of fenugreek are of heterogeneous metabolic pathways with GLUT-4, acting on hyperglycemia due to defective insulin production, insulin resistance action or both. Some scientists in association with Indian Council of Medical Research (ICMR) have organized and described the benefits of fenugreek in the research (a double-blind placebo controlled study) based on blood glucose controls, and they showed improvement in type 2 diabetes mellitus in terms of fasting blood glucose.

**Objective.** To evaluate the benefits of fenugreek consumption in patients with type 2 diabetes treated with pharmacological drugs and insulin, favoring on fasting blood glucose levels and glycated hemoglobin levels conducting at the Government care public hospital, Telangana, India.

**Materials and methods.** A total number of 90 patients of type 2 diabetes mellitus having at least 6 months prior and on pharmacological drugs and insulin were included in the objective evaluation. Ran-



domly half of the number of patients were selected and were given 5 gm of fenugreek seeds soaked in lukewarm water twice a day following strict dietary and exercise control as per the guidelines of the Indian Council of Medical Research (ICMR) for the management of type 2 diabetes Association protocols. Other than that, the parameters assessed were on a demographic profile on the first visit of fasting blood sugar levels and glycated hemoglobin levels every single month consequently until 6 months. The aim was to bring their fasting blood glucose in the study possibly to a reduced level unto a baseline of  $150 \pm 30$  mg/dl while in the control group was  $160 \pm 28$  mg/dl, and observing their glycated hemoglobin values consequently with it.

**Results.** 90 patients with type 2 diabetes mellitus were selected and registered in the study, grouped into 45 in each group randomly, designating by age, sex, and body mass index. In the study period, every month's fasting blood glucose levels and glycated hemoglobin levels were evaluated. The study group revealed a reduction in sugar levels, yet it was not significant until the 4th month of evaluation. At the starting of the 5th month, the level in the study group was  $145 \pm 25$  mg/dl while it was  $16 \pm 24$  mg/dl in the control group. A significant change between the two groups was noticed. However, this did not culminate in different values of g glycated hemoglobin, which were  $6.9 \pm 1.5$  % and  $7.03 \pm 2$  % in the study group and control group respectively. At the end of 6<sup>th</sup> month's evaluation, with comparison of data, there was a statistically significant difference in both fasting blood glucose values and glycated hemoglobin values. Statistical values showed a fasting blood sugar of  $140 \pm 23$  mg/dl in the study group and of  $155 \pm 23$  mg/dl in the control group and glycated hemoglobin levels also showed a similar trend in the 6th month of which were  $5.5 \pm 1.5$  % in the study group and  $6.9 \pm 2$  % in the control group.

**Conclusions.** The daily consumption of fenugreek 5 gm twice/day can have an enhanced effect along with diet control and exercise on fasting blood glucose and glycated hemoglobin within 6 months of regime, showing its anti-diabetic property. Due to its slow progressing effects should not rule out its potential benefits, which might be long-lasting qualitative results. The advantages of a dietary supplement of fenugreek have surely improved daily activities, physical performance, mental and physical stability in patients with type 2 diabetes mellitus. Rationally family doctors subsequently must recommend for the use of Fenugreek in addition to pharmacotherapy of diabetes mellitus type 2.

## ВПЛИВ АЛІМЕНТАРНОГО НАДХОДЖЕННЯ ГІДРОГЕНІЗОВАНИХ ЖИРІВ НА РЕПРОДУКТИВНУ ФУНКЦІЮ САМЦІВ ЩУРІВ

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**Вступ.** Сучасна демографічна ситуація багатьох країн світу, у тому числі й України, характеризується погіршенням репродуктивного здоров'я населення. Чоловічий фактор безпліддя як причина відсутності дітей за різними даними досягає 30-50 %. За останні 50 років за результатами широко-масштабних досліджень спермограми здорового населення різних країн світу констатується факт зниження фертильності чоловіків. Тому дослідження етіології, патогенезу, діагностики та лікування чоловічого безпліддя є актуальною проблемою в сучасній науці. Аналіз наукової літератури показав, що на сьогодні набуває актуальності дослідження негативного впливу хронічного вживання надлишку жирів з продуктами харчування на чоловічу фертильність. Особливо привертає увагу дослідження впливу гідрогенізованих жирів (маргаринів, як дешевих замінників повноцінних жирів), що може призводити до ожиріння та бути провокуючим чинником розвитку репродуктивних порушень у чоловіків (еректильної дисфункції, безпліддя). Адже питання користі та безпеки впливу хронічного вживання харчових гідрогенізованих жирів на чоловічу репродуктивну функцію залишається не з'ясованим.

**Мета.** Визначити наслідки впливу надлишку гідрогенізованих жирів в раціоні на репродуктивну функцію та гормональний стан у дорослих статевозрілих самців щурів.

**Матеріали та методи.** Експеримент та утримання тварин проводили відповідно до національних «Загальноетичних принципів експериментів на тваринах», ухвалених V національним конгресом з біоетики (Київ, 2013).