
Scientific Tracks & Sessions

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Diabetes Congress 2019



27th International Conference on
Diabetes and Endocrinology
May 16-17, 2019 | Prague, Czech Republic

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Optimizing treatment for diabetic patients with integrated approach of behavioral management, food science, artificial intelligence and pharmaceutical care

Ahmad Hussien Tareq

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Diabetes is a major, non-communicable disease with increasing prevalence at a global level. Optimized diabetic care comprises of various factors. It starts from right medications, frequent blood glucose monitoring, modification in diet, increasing physical exertion and behavioral intervention for patient compliance. Pharmaceutical care addresses the drug related issues and assist in sustaining desired blood glucose levels. However, lifestyle changes are the significant component of diabetes management. To adjust with these changes patient needs continuous education, motivation and monitoring. To track patient progress, pharmaceutical care and behavioral challenges, we are developing tool to manage clinical data, applying artificial intelligence and data analytics to acquire expedient actionable insights for the clinicians. Our focus is to resolve behavioral challenges of patients particularly with diet. With reference to South Asia, diet transition is significant part of disease management, and it poses high barrier for patient compliance. Most diabetics are accustomed to refined carbohydrate with high glycemic index (GI) food. They have difficulty following dietary recommendation for long term. The likely causes of

poor adherence are headaches, craving for carbohydrates, habituation for their preferred food choices like white rice, noodles and bread. We are developing a composite to incorporate it into raw food ingredients. Aim is to enable food production with lower GI. It will potentially help in addressing the challenges of nutritional adherence in diabetic patients. Although further research is needed to understand and explore this route, nevertheless it offers a promising route to replace high GI products with medium/low GI products.

Speaker Biography

Ahmad Hussien Tareq is pharmacist and scientist who did extensive work in peptide engineering, its application in infectious diseases drug development and nutrition sciences. After completing his PhD from NTU, Singapore, he has been extensively involved with the deep tech startup ecosystem of Singapore. Recently, he is building his own startup focused on developing optimized nutritional care and behavior compliance for diabetics. As a pharmacist, he worked with numerous diabetic patients, particularly in developing countries with aim of reversing type 2 diabetes. His work is focused on using integrated approach of behavior management, AI, sports science, big data, optimized nutritional & pharmaceutical care.

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Diabetes: Scenario, nutrition and enteral nutritional therapy

Pollyana Araújo Corrêa

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Diabetes mellitus (DM) is an important and growing health problem for all countries, regardless of their degree of development. In 2015, the International Diabetes Federation (IDF) estimated that 8.8% (95% confidence interval: 7.2 to 11.4) of the world population aged 20-79 years (415 million of people) lived with diabetes. If current trends persist, the number of people with diabetes was projected to exceed 642 million by 2040. The increase in the prevalence of diabetes is associated with several factors, such as: rapid urbanization, epidemiological transition, nutritional transition, greater frequency of sedentary lifestyle, greater frequency of overweight, growth and population aging, and also greater individual's survival with diabetes. The World Health Organization estimates that high glycemia is the third major factor in the cause of premature mortality, surpassed only by increased blood pressure and tobacco use. Nutritional care in diabetes mellitus (DM) is one of the most challenging parts of treatment and lifestyle change strategies, as well as in hospitalized patients in Enteral Nutritional Therapy.

International recommendations on enteral nutritional therapy (NER) in diabetes were initiated in 1998, when the ADA and the European Association for the Study of Diabetes (EASD) developed in Chicago, consensus that has established proposals for this purpose. The latest consensus published by the ADA recommends the presence of a registered dietitian in the hospital team to conduct a realistic plan on nutritional therapy. A recent study including patients with DM2, admitted to intensive care units (ICUs), showed that the use of a specialized formula in glycemic control was correlated with a reduction in mortality and with better economic results.

Speaker Biography

Pollyana Araújo Corrêa has graduated in nutrition at the age of 22 years from Universidade Católica de Brasília and she also had a graduation in Business Management, Comptroller and Corporate Finance from IPOG, BR. She is a technical advisor of clinical nutrition at Nestlé Health Science in Brasília, BR, working with enteral nutritional therapy in various pathologies.

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Changes in hydrogen sulphide system in myocardium of rats with experimental diabetes

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Background: Diabetes mellitus and its complications increase the risk of cardiovascular morbidity and mortality, contributing to the damage of myocardium. Several mechanisms are proposed to understand the development of myocardial diabetic complications, including elevated oxidative stress, altered calcium homeostasis, activation of apoptotic signals, and reduction of angiogenesis. H₂S is a gas transporter and is endogenously generated in cardiovascular system by cystathionine- γ -lyase (CSE, EC 4.4.1.1), 3-mercaptopyruvate sulfotransferase (3-MST, EC 2.8.1.2), cysteine aminotransferase (CAT, EC2.6.1.3), thiosulfate dithiol sulfur transferase (TST, EC 2.8.1.5). H₂S is known for its anti-apoptotic, antioxidant, anti-inflammatory and pro-angiogenic activity, and changes in endogenous H₂S production are associated with various diseases. However, information on endogenous H₂S production in the heart of diabetic rats is very controversial and limited. Recent studies have shown that H₂S participates in vasorelaxation, cardio protection and inhibition of vascular remodeling, and that the violation in the CSE / H₂S pathway is involved in the development of some cardiovascular diseases. The purpose of this study was to investigate whether H₂S system is involved in the development of diabetic heart in rats.

Methods: We measured the content of H₂S, activity of CSE, CAT, TST, the influence of NaHS (exogenous H₂S donor) on these parameters in the myocardium of rats. Twenty-one male albino rats (180-250g) were selected for the experiment. Rats were randomly divided into three groups: - healthy control, 4-week STZ- diabetes model, 4-week STZ-diabetes model, subjected to i/p injection of NaHS (14 mmol / kg / day) for 28 days. Hyperglycemia was induced by a single i/p injection of STZ (40 mg/kg). H₂S in the myocardium of rats was determined by spectrophotometry (Wilinski (2011)). The activity of H₂S synthesizing enzymes - CSE, CAT, TST in

myocardial homogenates were evaluated in an adapted incubation medium by the growth of a sulfide anion.

Results: Our results suggest that H₂S content in the heart of STZ-diabetic rats tended to decrease compared to control (35.4%, $p < 0.05$). However, after administration of NaHS, the H₂S content in myocardium of STZ-diabetic rats exceeded that in STZ-diabetes group by 24.8% ($p < 0.05$) and was significantly lower than control by 20.4% ($p < 0.05$). The activity of CSE, the key enzyme involved in H₂S production in the cardiovascular system, CAT and TST, was lowered in STZ-diabetic rats (56%, $p < 0.05$; 33%, $p < 0.05$; 35%, $p < 0.05$ respectively), which may have contributed to a decrease in H₂S levels. The injection of NaHS for 28 days did not cause significant changes in CSE, CAT, and TST activity.

Conclusions: Our findings suggest that H₂S levels in the heart of STZ-diabetic rats have been reduced due to changes in the activity of the major H₂S -producing enzymes that may be involved in the pathogenesis of cardiovascular diabetic complications

Speaker Biography

Iryna Palamarchuk, PhD student, professor assistant at Department of Biochemistry and General Chemistry at Vinnitsa National Medical University named after Pirogov, Vinnitsa, Ukraine. She completed her MD from Vinnitsa National Medical University named after Pirogov, Vinnitsa, Ukraine in 2007. From 2007 to 2011, she worked as a general practitioner at a public hospital and ambulance. She has been working as a professor assistant at the Department of Biochemistry and General Chemistry at Vinnitsa National Medical University named after Pirogov since 2012. In 2016, she became a PhD student at the same department. She joined the research team which focuses on the investigations into hydrogen sulfide and sulfur-containing amino acids metabolism in setting of diabetes mellitus and obesity for effective treatment.

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Daily protein intake in working females and its correlation to obesity and T2DM

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One of the cornerstones in diabetes management is the medical nutrition therapy. MNT plays a major role towards better diabetes control and weight reduction. Macronutrient composition with special emphasis on the total protein intake of the day has been debated for a long time. However, there is increasing evidence that a modest increase in dietary protein intake (0.8-1gm/kg BW) is a valid option to control obesity and T2DM. Indian meals are known to be predominantly cereal based meals hence the intake of cereal based proteins is naturally on higher side. With the known fact of the cereal based proteins to be less bioavailable, the overall protein intake remains as a cause of concern. On the other hand, the non-vegetarian source of protein is clubbed with high fat (visible and invisible fat) intake. The high fat intake is also linked to higher body mass index (BMI) and obesity, a well-established cause of T2DM. Along with the low protein, high fat dietary patterns the other factors such as age, gender, obesity, hypertension, and family history of diabetes are known to be independent risk factors for diabetes. With urbanization there has been a paradigm shift in the percentage of working females (between the age group of 18-60) in all sections irrespective

of their socio-economic sector. From a corporate office 167 employees opted for a Face to Face (F2F) dietary assessment and counseling session. A sample of 75 female was selected based on the gender specified in the form. The study showed that the overall protein intake in the working females was unsatisfactory. 26% (n=20) of meals had low protein intake (less than 8% / meal). 20% (n=15) recorded a BMI of more than 27 and 10% (n=8) were diagnosed with hyperglycemia and where prescribed oral hypoglycemic drugs.

Speaker Biography

Ashwini S Kanade has completed her Master in Dietetics and Food Service Management, P G Diploma in dietetics, registered dietician 07/04, certified diabetes educator and P G Diploma in clinico regulatory patents from India. She has a work experience of 18 years in the field of nutrition and dietetics. She is a most sort after speaker in the corporate (Google, Infosys, Welspun, Johnson N Johnson to name a few) sector and authored multiple short articles in newspapers and health magazines. She owns a private practice and is associated as a consultant with a digital healthcare company for developing therapy for chronic metabolic diseases to be delivered via an App (smart phone).

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