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23rd International Conference on

Herbal and Alternative Remedies for Diabetes and Endocrine Disorders

November 02-04, 2017 Bangkok, Thailand

Scientific Tracks & Abstracts (Day 1)



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HERBAL AND ALTERNATIVE REMEDIES FOR DIABETES AND ENDOCRINE DISORDERS

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How did things get so bad? The past, present and future of diabetes type-2

Peter Mansfield

Good Health Keeping, UK

This paper relates the history of diabetes type-2, from the beginning of settled farming and explains why there has from the 1950s until recently been so little emphasis on the prevention and reversal of the disease. Pilots and others in the early stages of diabetes have reversed their condition permanently by limiting carbohydrate intake. With little or no glucose in the blood, there is no diabetic challenge. Carbohydrate intake has in the past year been linked by nutritional academics with diabetes risk. Carbohydrate restriction is the underlying principle of several diets. The Atkins diet undermines blood lipids and insulin response to a glucose load. The Paleolithic diet goes further by additionally limiting dairy produce. Food combining and the Montignac diet, separate fat and starch which makes weight gain impossible. All are mutually compatible. The prize that motivates the pilot is unrestricted certification as fit to fly. The general public has no such motivation, so diabetes is unnecessarily prevalent. We need to develop charges, no-claims discounts or tax incentives to encourage the general public to follow the pilot's example.

Biography

Peter Mansfield was a Research Fellow in Community Medicine at UCH Medical School, London before beginning Good Healthkeeping, an experimental GP practice intended to encourage health. He is currently an Aviation Medical Specialist with extensive experience in the prolongation of health in middle aged pilots. He has published several books, articles in learned journals and has presented at a number of international conferences.

Mansfield.pj@gmail.com

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Controlled clinical study of an Ayurvedic anti-diabetic formulation BGR-34 tablets for its efficacy and safety in patients with diabetes mellitusA Rathi¹, B P Gupta², A Kumar², B P S Tomar², I Sharma¹, N Kohli³, S Sharma¹ and A K Sharma¹¹Aimil Pharmaceuticals Ltd., India²Aggarwal Dharmarth Hospital, India³Aimil Healthcare and Research Centre Ltd., India

Introduction & Aim: According to International Diabetes Federation, 415 million adults were living with diabetes in 2015 and this number is expected to increase to around 642 million by 2040. The Scientists of India, Council for Scientific & Industrial Research (CSIR) has realized the alarming rise in incidence of diabetes and developed scientifically validated, anti-diabetic ayurvedic drug to prevent and treat Diabetes mellitus type-2. CSIR, has been ranked 12th in the world among the government institutions. The drug has been developed jointly by scientist of National Botanical Research Institute (NBRI) and Central Institute for Medicinal & Aromatic Plants (CIMAP), the Lucknow, India-based research units of CSIR. Scientists of NBRI and CIMAP made an in-depth study on 500 anti-diabetic herbs from ancient literature of Indian System of Medicine Ayurveda (*Caraka Samhita*, *Sushruta Samhita*, *Astanga Hridaya* and *Bhavprakash*) and finally identified the six herbs (*Berberis aristata*, *Tinospora cordifolia*, *Pterocarpus marsupium*, *Gymnema sylvestre*, *Rubia cordifolia* and *Trigonella foenumgraecum*). Pre-clinical studies conducted by CSIR on BGR-34 produced encouraging results in diabetes induced experimental subjects (unpublished data CSIR). Encouraged by the preclinical outcome, CSIR moved to investigate the active components from BGR-34 and we moved to test its clinical efficacy, with an aim to ensure the scientific validity, efficacy and safety of BGR-34 on blood glucose regulation with type-2 diabetes mellitus based on clinical studies.

Methodology: A double blind placebo controlled clinical study of BGR-34 in patients with type-2 DM was approved by the independent human ethics committee of Aggarwal Dharmarth Hospital, New Delhi, India.

Findings: BGR-34, showed promising result with respect to glycemic parameters in patient with type-2 diabetes with significant reduction in fasting blood sugar by 34.3%, post prandial blood sugar by 35.5% and glycosylated hemoglobin by 20.31% as compared to placebo group showing reduction by 13.2%, 10.9% and 10.87%, respectively. The trial has also been registered to CTRI, India.

Conclusion & Significance: BGR 34 has been investigated to contain a number of active biomolecule molecules including the compound berberine (*Berberis aristata*), a natural dipeptidyl peptidase IV (DPP-4) inhibitor, that act by increasing endogenous GLP-1 and GIP concentrations. Via this mechanism, insulin secretion is glucose-dependently stimulated and glucagon secretion inhibited.

Biography

Anshu Rathi is working as a Team Lead at Aimil Pharmaceuticals (India)Ltd. Her wide range of publications in various national and international journals.

anshu.rathi@aimilpharmaceuticals.com

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The insulin resistance induced by obesity is reversed by *Uncaria tomentosa* through modulation of inflammatory pathway in the liver of mice**Layanne C C Arauj, Isadora C Furig, Gilson M Murata, J Donato Jr, Silvana Bordin, Rui Curi and Carla R O Carvalho**
University of Sao Paulo, Brazil

We investigated the effect of the herbal extract *Uncaria tomentosa* (Ut) (50 mg/kg, crude extract, for 5 consecutive days) in two mice models of obesity: high fat diet (DIO) fed mice and the genetic ob/ob mice. Both obese mice exhibited diabetes ($151 \pm 4 \text{ mg}^* \text{dL}^{-1}$ vs. $90 \pm 2 \text{ mg}^* \text{dL}^{-1}$ and $205 \pm 15 \text{ mg/dL}$ vs. $163 \pm 11 \text{ mg/dL}$, $p < 0.05$, respectively) and insulin resistance (Kitt: $4.0 \pm 0.1\% \cdot \text{min}^{-1}$ vs. $0.5 \pm 0.3\% \cdot \text{min}^{-1}$, $p < 0.05$, respectively). The Ut treatment induced a 1.8-fold rise in insulin sensitivity in the DIO mice to similar value to that found in the lean group $5.3 \pm 0.5\% \cdot \text{min}^{-1}$ and 20% reduction in the fasting glycaemia of both obese mice. The DIO group had 30% and 50% reduction in the protein expression of IR and IRS-1 protein levels respectively, as compared with the SD group (100%) ($p < 0.05$). The stoichiometric rate of IRS-1 phosphorylation in the 307-serine aminoacyl residue was increased in DIO animals as compared to SD group ($145 \pm 9\%$ vs. $100 \pm 10\%$, respectively, $p < 0.05$). The Ut treatment reduced the serine phosphorylation of IRS-1 by 25% and by 40%, in the liver of DIO and of ob/ob mice respectively. The Ut treatment improved the inflammatory balance in the liver of both obese animals. There were 20% reduction in the pro-inflammatory index (mRNA IL1b/IL10) associated to 12% reduction in the pro-macrophage activation (mRNA F4/80/Arginase1) in the DIO mice, and even more pronounced reduction in the pro-macrophage activation to 40% in the ob/ob. Results herein reported prompted to the conclusion that the improvement in insulin sensitivity induced by the *Uncaria tomentosa* crude extract is associated with a reduction in inflammatory index in the liver of obese mice.

Biography

Layanne C C Arauj has her graduation degree in Biomedicine, Masters in Cell and Molecular Biology and she is currently a Doctoral student in Human Physiology at the Biomedical Sciences Institute of the University of São Paulo, working on various subjects like obesity, insulin resistance, hepatic steatosis and intestinal microbiota in the Laboratory of Intracellular Signaling.

lay_biomed@yahoo.com.br

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From pathophysiology to therapy: Why herbal medicine, when and for what?

Nicolas F Wiernsperger
University of Lyon, France

The diabetes field has experienced several major and spectacular changes in our knowledge over the last decade. In particular epidemiological studies as well as results from large-scale clinical trials have challenged the classical views. Regrettably these novelties have rather been at odd with previous traditional views. Thus these studies not only revealed that treating established has at best limited effects on cardiovascular outcome but they also showed that lifestyle measures in prediabetic patients have essentially failed as compared with logical expectations. Thus one comes to the conclusion that the earlier the better. This implies to detect the subjects at risk and to find alternative therapeutic and preventive measures. The identification of early pathological changes leading to insulin resistance long before diabetes installs shows that low grade chronic inflammation and oxidative stress are among the most important causes. Today we know the origins of these deleterious mechanisms. Therefore intervening as early as possible with potent herbal compounds targeting these mechanisms appears to be a promising method. There is nowadays clearly increasing awareness of this problem but it will require another decade at best to see if phytochemicals fulfill the large expectations we put on them.

Biography

Nicolas F Wiernsperger is a French Physiologist and Pharmacologist. He has been Head of Research Department on Cerebrovascular Accidents at Novartis, Switzerland until 1984. He established as a world recognized Specialist of Microcirculation. From 1985 to 2005, he was appointed as the Head of International Pharmacological Development and Senior Pharmacologist at Merck KgA in Lyon. He was also the Head of a private/public research unit on Diabetes Microvascular Complications at Lyon University. He is an international recognized expert of cardiometabolic diseases and aging. He has published nearly 150 papers as well as 2 books. He has been teaching as Invited Professor at several universities. Since 2005, he deals with the development of new drugs as well as, more recently, nutraceuticals.

nicowi@hotmail.fr

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A mystical scent: Clove's essential oil and its major component eugenol-induced marked relaxation in isolated diabetic rat corpus cavernosum**Alev Onder, Serap Gur, Didem Yilmaz-Oral and Ecem Kaya**
Ankara University, Turkey

Diabetes Mellitus (DM) is the second greatest risk factor for Erectile Dysfunction (ED), following age. Phosphodiesterase type-5 inhibitors (PDE5i), which are recommended as first-line treatment for ED, are not effective in the management of diabetes-associated ED. Currently, many medicinal plants and secondary metabolites are natural remedies for ED. A tropical plant, *Syzygium aromaticum* (L.) Merrill & Perry or clove (*Eugenia caryophyll*, *Caryophyllus aromaticus* L.) from the Myrtaceae family has aphrodisiac activity. In Europe, Asia and the oriental world, it has been used for culinary and medicinal purposes for centuries, either alone or in combination with other spices. It is reported to be used as sexual invigorators in India, besides many useful effects in the world. The plant simply contains polyphenols and Eugenol (E) which are the major components of the clove oil from aromatic flower buds (70-85%). The clove shows antioxidant, antimicrobial, antinociceptive, antiviral and cytotoxic properties. In the previous study, treatment with 50% ethanolic extract of clove significantly increased the sexual activity of normal male rats. The aim of this study is to investigate the possible beneficial effects of Clove Oil (CO) and its component E on rat Corpus Cavernosum (CC) from Streptozotocin-induced diabetic rats. 20 adult male Sprague-Dawley rats were equally divided into control and diabetic groups. Diabetes was induced by a single intraperitoneal injection of streptozotocin (45 mg/kg). Isolated rat CC strips were placed in organ baths containing Krebs solution. The relaxant responses to CO (25-100 μ L) and E (25-100 μ L) were investigated in rat CC after precontraction with phenylephrine (10^{-5} M). CO and E induced remarkable relaxations of CC strips in a concentration-dependent manner in control and diabetic rats (100%). As a conclusion, CO and E caused pronounced penile erection in diabetic rats. We suggest that both may be a successful treatment strategy in diabetic patients with ED who do not respond to PDE-5i.

Biography

Alev Onder is currently working as a Professor at Ankara University, Department of Pharmacognosy. She has spent a year in long-term research programs regarding the anticancer activity of coumarins and liverworts in Meiji Pharmaceutical College and Tokushima Bunri University in Japan and in Seoul National University, South Korea. She is a Lecturer of Aromatherapy and Natural Products. Currently, she has been investigating numerous modern medicinal plants for treatment of erectile dysfunction and in natural products (in particular on coumarins), essential oils, liverworts and their biological activity in pharmacognosy and phytochemistry.

pharmacogalev@gmail.com

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Surging prevalence of cryptogenic cirrhosis in type-2 diabetes mellitus: An alarming fact or a big illusory bias?

Abbas Tavakolian Arjmand
Azad University of Shahrood, Iran

Background & Aim: A growing body of evidence considers the cryptogenic cirrhosis as the immediate offspring of Type-2 Diabetes Mellitus (T2DM). We would suggest that, the majority of reported cases of cryptogenic cirrhosis are actually the result of surreptitious or under-estimated alcohol consumption in conjunction with underlying metabolic syndrome, not the direct consequence or a chronic complication of T2DM. For further clarification of the issue, a population of T2DM patients living in a closed religious society where alcohol production, distribution and consumption were legally and ritually banned, were investigated for manifestations of cirrhosis and end-stage liver disease.

Materials & Methods: In a prospective observational study, 132 T2DM patients (43 males and 89 females) were consecutively enrolled. They were interviewed and carefully investigated for any stigmata of chronic liver failure and cirrhosis. Then, an all-inclusive panel of liver function tests completed with viral markers, immunological markers and abdominal sonography were carried out. Liver biopsy was considered once academically and ethically indicated.

Results: The average age of patients was 58 ± 10.9 years (range, 31-83 years), and the duration of diabetes was 7.4 ± 6 years (range, 1-25 years). BMI came out as 34.9 ± 5.3 with mean waist circumference of 71.2 ± 11.5 cm. To our surprise, from 132 T2DM patients only eight (6%) displayed mild to moderate abnormal liver enzyme levels, of which only 2 cases had liver enzyme levels of more than twice normal. With regard to our main concern, only two subjects (1.5%) manifested overt liver failure and cirrhosis, of which, one person tested positive for HCVAb and the other disclosed eventually to have been drinking alcohol heavily at younger ages for years while living abroad.

Conclusion: We would suggest, if alcoholic liver disease as a major confounding variable- becomes efficiently eliminated from the relevant studies, T2DM, per se, would seldom persist as a direct causative risk for cryptogenic cirrhosis. We believe that T2DM, NAFLD and cryptogenic cirrhosis are all the results of a superior pathogenic process, the metabolic syndrome or better to say insulin resistance syndrome. As a matter of fact, the terrifying prevalence of cryptogenic cirrhosis is the outcome of awful impact of hyperinsulinemia of metabolic syndrome on surreptitious and over-looked alcoholic liver disease.

Biography

Abbas Tavakolian Arjmand is an Associate Professor at Shahrood Azad University of Medical Sciences, Iran. His research interest is in metabolic syndrome, obesity, insulin/IGF-1 Receptor cross-talk and PCOS. He has wide range of publications in various national and international journals.

dr.tavakolian@gmail.com

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Protective antioxidant effects of polyphenols extracted from the French medicinal plant *Antirhea borbonica* on cerebral endothelial cells exposed to diabetes-related hyperglycemia

Angelique Arcambal, Janice Taile, Anne Bialecki, Olivier Meilhac and Marie-Paule Gonthier
University of Reunion, France

Type-2 diabetes promotes vascular complications, leading to neurological disorders such as stroke. Indeed, hyperglycemia alters the blood-brain barrier integrity by deregulating the cerebral endothelial cell function. Oxidative stress may play a causal role. Thus, the biological effect of plant polyphenols known to exert antioxidant capacities is of high interest. We evaluated the effect of polyphenols from the medicinal plant *Antirhea borbonica* referred in the French Pharmacopeia for antidiabetic properties, on the production of redox and vasoactive markers from cerebral endothelial cells exposed to hyperglycemia. Polyphenols extracted from *Antirhea borbonica* were identified by UPLC-MS method. Then, their action on murine bEnd.3 cerebral endothelial cells exposed to hyperglycemia was determined by measuring the intracellular levels of free radicals (DCFH-DA assay), SOD activities (enzymatic assay) and the production of redox and vasoactive molecules (RT-qPCR, DAF-FM assay). We found that *Antirhea borbonica* exhibited a high content (4%, w/w) of polyphenols including caffeic acid, chlorogenic acid, kaempferol and quercetin. Plant polyphenols decreased hyperglycemia-induced production of free radicals and NADPH oxidase 4 gene expression. Moreover, plant polyphenols counteracted the deregulation of Cu/ZnSOD activity and Nrf2 redox transcriptional factor gene expression mediated by hyperglycemia. Preconditioning of cells with specific inhibitors targeting the signaling molecules JNK, ERK, PI3K and NFκB modulated hyperglycemia-induced oxidative stress and showed their possible involvement in polyphenol action. Polyphenols also abrogated hyperglycemia-mediated down-regulation of the intracellular levels of NO vasodilator. Interestingly, caffeic and chlorogenic acids detected among the major polyphenols of *Antirhea borbonica* exerted similar protective effects. Collectively, these findings demonstrated that polyphenols extracted from *Antirhea borbonica* protected cerebral endothelial cells against hyperglycemia-mediated oxidative stress. Further studies are in progress to evaluate the in vivo benefits of plant polyphenols on a mouse model exposed to hyperglycemia and middle cerebral artery occlusion to mimic a cerebral ischemia during type-2 diabetes.

Biography

Angelique Arcambal is pursuing her PhD from University of Reunion, France, under the supervision of Professor Marie-Paule Gonthier. Marie-Paule Gonthier is a Professor of Nutrition at the Medicine School of the University of Reunion in France. She has received her PhD degree in Nutrition from the Medicine School of Clermont-Ferrand, France. Her work consisted on evaluating the bioavailability of dietary antioxidant polyphenols in humans and demonstrated the role of the gut microflora on polyphenol metabolic fate. During her Post-Doctoral position at the National Research Center of Naples, Italy, she contributed to the understanding of the effects of endocannabinoids derived from dietary lipids on adipose tissue biology and reported the overproduction of endocannabinoids from human adipocytes and pancreatic beta cells during obesity and type-2 diabetes.

angelique.arcambal@univ-reunion.fr

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Comparative effectiveness of *Abelmoschus esculentus* L. (Okra) and acarbose in lowering blood glucose: An experimental study using streptozotocin-induced diabetic rats

Anniline C Teng, E D V Marcelo, S A Mohamed, S A C Ong Siu, A L P Orille, R P D Punzalan, P S V Sawen, A C Teng, F M C De Guzman and D P Wy
Manila Central University, Philippines

Diabetes is presently a serious worldwide epidemic, affecting about 382 million people globally in 2013 and directly causing the deaths of more than 1.5 million people in 2012. This study evaluates the glucose-lowering potential of *Abelmoschus esculentus* L. (Okra) in diabetic rat models as compared to the commercial drug acarbose. In this randomized, double-blind experimental study, 48 streptozotocin-induced diabetic male Sprague Dawley rats aged 75-90 days old and weighing 150-250 grams were divided into three groups: (1) Experimental group which was given 300 mg/kg aqueous extract of *Abelmoschus esculentus* L. (okra), (2) Positive control group which was given 15 mg/kg acarbose and (3) Negative control group which was given 5 mL/kg distilled water. All groups were concurrently treated once daily orally for 7 days. Blood glucose levels were measured one hour after treatment administration using EasyTouch[®] glucometer. The safety of okra extract and acarbose were also determined based on subject mortality. After 7 days, the experimental group and the positive control group demonstrated glucose-lowering effects. However, the decrease in blood glucose from the baseline up to day 7 was statistically significant only in the experimental group (p-value<0.05). Comparison of the glucose values among all the groups on day 7 demonstrated a significant difference in the experimental group (p value=0.02). This showed that okra extract exhibited a time-dependent effect. Also, statistical analysis of mortality which yielded a non-significant result established the safety of acarbose and okra extract as used in the study.

These findings prove the potential beneficial effect of *Abelmoschus esculentus* L. (Okra) in the treatment of diabetes through its glucose-lowering effect which has been exhibited to be comparable to that of the commercially prepared drug acarbose. Thus, it may be developed and used to treat type-2 diabetes in humans.

Biography

Anniline C Teng is currently a Medical student, doing Internship in Manila Central University Hospital in EDSA, Caloocan City, Philippines.

anniline_teng@yahoo.com

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In vitro and *in vivo* hypoglycemic evaluation of *Terminalia chebula* Retz leavesJayashree Dutta and M C Kalita
Gauhati University, India

Diabetes mellitus is one of the fast-growing health problems in both developing and developed nations. A wide and diverse range of plants reported in Indian literature are used in the treatment of diabetes mellitus. Being a store house of medicinal plants, the north-eastern part of India serves as reservoir of traditional based knowledge for treatment of several diseases including diabetes. In the present study, the leaf part of *Terminalia chebula* Retz was accessed for its hypoglycemic potentiality both *in vitro* and *in vivo*. Initial *in vitro* test was performed using enzyme α -amylase and α -glucosidase. *In vitro* analysis was followed by *in vivo* hypoglycemic evaluation in alloxan induced diabetic rat model. *Terminalia chebula* leaves has demonstrated a moderate level of α -amylase inhibition (70.46%) with IC_{50} -06.09 \pm 0.342 mg/mL and very high yeast α -glucosidase inhibition (100%) with IC_{50} -0.956 \pm 0.342 mg/mL compared to standard reference drug acarbose. Oral carbohydrate tolerance test of methanol extract *T. chebula* leaves revealed that oral administration of the extract at the dose of (300 mg/kg b.w) to maltose loaded diabetic rats significantly ($P < 0.05$) suppressed the rise of post-prandial blood glucose level compared to the standard drug acarbose. The phytochemical analysis reveals that the crude methanol extract of *T. chebula* leaves is very rich in phytoconstituents like phenol, tannin flavonoids, terpenoid and glycosides compared to petroleum ether extract and acetone extract. The total phenol and flavonoid content of *T. chebula* leaves was found to be 123.64 \pm 1.09 mg/g and 184.23 \pm 2.34 mg/g, respectively. The study concludes that the leaf part of *T. chebula* is a potential inhibitor of enzyme α -glucosidase that can be employed for further for development of suitable anti-diabetic formulation working against postprandial hyperglycemia.

Biography

Jayashree Dutta is a Research Scholar in Department of Biotechnology, Gauhati University, India. She has been working in the field of anti-diabetic medicinal plants from last five years. She has completed her Masters in Biotechnology and is very much interested in the emerging field of pharmaceutical biotechnology leading to drug discovery. She had earlier documented few plants having hypoglycemic potentiality from North East region of India via tremendous field survey.

jshrdtt@gmail.com

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Experimental evaluation of anti-diabetic property of pericarp of *Myristica fragrans* Houtt., on albino Wistar rat model

Manojkumar N and Kiran O Mantri
Kottakkal Ayurveda College, India

Introduction & Aim: Diabetes mellitus is a multisystem disorder affecting 387 million people in the world and among them 78.3 million from South East Asia. By 2040, this is expected to rise to 131 million. Significance of Alternative medicine is increasing day by day as there is no cure for this condition in contemporary system of medicines. Many Ayurvedic doctors are effectively using pericarp of *Myristica fragrans* Houtt., in diabetes mellitus. But they are not documented scientifically yet. Moreover, need of adding new drugs to the Ayurvedic pharmacopoeia are essential in this era of drug scarcity and adulteration. Hence in this study, an animal model is selected to prove the efficacy of *Myristica fragrans* Houtt.

Method: 30 Alloxan-induced diabetic animals were selected for the study and grouped into four each containing 6 rats, half-dose, therapeutic dose and double-dose of the cold infusion of the drug, the standard drug Glibenclamide (0.5 mg/Kg.b.wt.) and the control group with distilled water. Blood sugar level was assessed on day 0, 1, 2, 5, 10, 15 and 20 at time interval 0, 1, 2, 4 and 6 hours by using Glucometer. Hepatic and renal function and anti-oxidant action were also assessed.

Result: Therapeutic dose and double-dose were found to be significantly effective in blood sugar level and also in the renal and hepatic parameters. Levels of antioxidant enzymes and glutathione were increased as compared to the control group.

Conclusion: Pericarp of *Myristica fragrans* is therapeutically effective in Alloxan-induced diabetic rat model and also possesses significant antioxidant activity.

Biography

Manojkumar N is a Professor in Kottakkal Ayurveda College, Kerala University of Health Sciences, India. He has 15 years of experience in evaluation, teaching, administration and research. He is a Medical Doctor who has been practicing Ayurveda for the past 22 years.

manojkumarndr@gmail.com

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Management of diabetes mellitus through Ayurveda by *Dosha* and *Prakrity* based assessmentsPrakash Mangalasseri¹, Surendran E, Jayadevan C V¹, Manojkumar A K² and Snigdha Roy³¹VPSV Ayurveda College, India²Kerala University of Health Sciences, India³ISM Kerala, India

Diabetes mellitus was reported to be responsible for 11% of the total global adult health expenditure and 5.1 million deaths. 80% of people with diabetes live in low- and middle-income countries. India becomes top in South East Asia region with 65.1 Million diabetic people with a prevalence of 9.09%. Traditionally in India, Diabetes was controlled by indigenous Ayurvedic Health Care System. In Ayurveda, the disease is diagnosed as Prameha and effectively managed by its unique principles. Ayurveda identify various Dosha, types for *Prameha* with different prognostic considerations. Among the three Dosha, sub-types of *Prameha*, *Kapha* is curable, *Pitta* is mitigatedly manageable and *Vata* is incurable. The psychosomatic constitution (*Prakrity*) of an individual also plays an important role in progression, prognosis of disease and response to the treatment. *Pitta prakrity* constitutions are more prone to stress and stress itself is a cause for manifestation of hyperglycemia. A cross sectional study was carried out to find out the association of stress and hyperglycemia in *Pitta* predominant constitution and it was demonstrated in the particular *Prakrity* ($p < 0.001$). In routine clinical practices, the famous *Pitta* alleviating drug *Mahaatiktakam* decoction was found to be effective in hyperglycemia especially when associated with stress. A clinical trial was conducted to find out the efficacy of the decoction in stress associated hyperglycemia seen in diabetic patients of *Pitta* predominant constitution and the outcome was highly significant ($p < 0.001$). The paper attempts to explore the utility of *Dosha* and *Prakrity* based considerations in the management of diabetes mellitus through Ayurveda.

Biography

Prakash Mangalasseri has graduated from Kottakkal, India and Post-graduation from Gujarat Ayurveda University. He is presently a PhD student from Kerala University of Health Sciences. He has wide research and treatment experience in general medicine, male infertility, Panchakarma therapy and Ayurvedic psychiatry. He has many publications and contributed chapters in various books.

ayurvedaprakash@gmail.com

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Ayurvedic management of diabetic retinopathy: A case report

P T P Adithya Babu

VPSV Ayurveda College, India

Diabetic retinopathy is the most common cause of legal blindness between the ages of 20 and 65 years. It is more common in type-1 diabetes. The major risk factors are duration of diabetes mellitus, poor metabolic control, pregnancy, hypertension, nephropathy and other factors such as smoking, obesity, hyperlipidemia, etc. Microangiopathy primarily affecting the pre-capillary arterioles and post capillary venules are the most prominent pathological changes. It also exhibits the features of micro-vascular occlusion and leakage. Three stages of the disease are identified. They are background retinopathy, proliferative and pre-proliferative stages. From the Ayurvedic perspective, the condition is to be discussed under the concept Timira-Kacha-Linganasa (a group of diseases, causing progressive loss of vision) involved *Dosha* being categorized as per the clinical presentation, the major changes being the *Sroto Dushti* (deterioration of vessels). Here the case of 72-year-old man is discussed, presented with features of proliferative diabetic retinopathy and he has positively responded to the proposed Ayurvedic management.

Biography

P T P Adithya Babu is presently working as an Associate Professor at the Department of Salakya Tantra, Ayurveda College, Kottakkal. He is a well-known practitioner in Ayurvedic Ophthalmology. He has presented papers in various national and international seminars. He also has tremendous clinical experience in treating major ophthalmic conditions through the Ayurvedic approach. His current research focuses on diabetic retinopathy, glaucoma and dry eye syndrome.

adithdr@gmail.com

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Role of Ayurvedic dietetics in the prevention and management of Diabetes Mellitus: A review

Mukesh Edavalath

Vaidyaratnam P S Varier Ayurveda College, India

Diabetes Mellitus (DM) is a major non-communicable disease with increasing prevalence at global level. Poorly controlled diabetes leads to several complications, including heart diseases, stroke and death. Prospective clinical trials provide evidence for the effectiveness of nutrition therapy in the prevention of DM. Contemporary studies in biomedicine indicate an unhealthy diet and gut dysfunction as major contributors to DM. Likewise, Ayurvedic texts describe improper diet and the subsequent gut dysfunction as the prime factor in formation of *Ama* (partially digested or toxic end products) which further leads to various diseases including DM (*Prameha*) and other diseases similar to metabolic syndrome in Biomedicine. To prevent formation of *Ama*, Ayurveda advocates eight principles of *Aharavidhi* (rules governing Diet dynamics). Further, it is advised to avoid improper eating patterns like irregular timings and food intake before digestion of the previous meal. The concept of *Virudhahara* (incompatible foods) in disease pathogenesis is also unique to Ayurvedic Dietetics. In established cases of DM, clinical trials as well as systematic reviews report a ~1%-2% lowering of HbA1c values along with other beneficial outcomes from nutrition therapy interventions. The existing Medical Nutrition Therapy (MNT) guidelines revolve around what to eat and concentrate more on macro and micronutrients with their caloric and glycemic values. Although it emphasizes on individualization, Ayurveda has much broader principles of adapting the diet, with due emphasis on individual factors including the *Prakriti* (body constitution), *Dosha* (body humor), *Agnibala* (digestive power), *Desa* (place of living), *Kala* (season) and *Satmya* (personal compatibility) of the patient. In managing complications, Ayurvedic Dietetics recommends targeted nutrition therapy where food processed with medicinal herbs is administered for specific therapeutic outcomes. Finally, management of DM differs in obese and non-obese accordingly, the diet also varies for them.

Biography

Mukesh Edavalath currently holds the Chair of Assistant Professor at the Department of Roganidana, in Clinical Medicine at Vaidyaratnam P S Varier Ayurveda College, Kerala, India. He has obtained his Master's degree in Ayurveda from the University of Kannur and had previously served in the Department of Indian Systems of Medicine, Government of Kerala. Apart from being an active Clinician and Clinical Educator, he has been involved in many community outreach programs on health awareness and medical services. His current research focuses on the role of diet dynamics in the pathology and management of diabetes mellitus, often described in classical Ayurvedic medicine but totally disregarded in modern biomedicine.

mukeshayur@gmail.com

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Hypolipidemic activity of *Madhuca longifolia* in Triton-induced hyperlipidemic rats

Abhijit Shirao, Kochar N I and Chandewar A V

P. Wadhvani College of Pharmacy, India

Objective: In the present study, an ethanolic extract from *Madhuca longifolia* bark was evaluated for its hypocholesterolemia and hypotriglyceridemic activities using Triton WR-1339 induced hyperlipidemic rats as experimental model.

Material & Method: Hyperlipidemia was induced by a single injection of Triton WR 1339 (400 mg/kg i.p.) in Sprague Dawley rats. Ethanolic extract of *Madhuca longifolia* bark (ML) (250, 500 and 750 mg/kg/day) was administered to hyperlipidemic rats for one week. Harvested serum was analyzed for lipid profile such as cholesterol, triglyceride and lipoproteins. Oxidative stress parameters like Superoxide Dismutase (SOD), Catalase (CAT), Glutathione Peroxidase (GPx) and glutathione reductase (GRh) and activity of lipolytic enzyme such as Lecithin-Cholesterol-Acyltransferase (LCAT) and Post-Heparin lipolytic activity (PHLA) were estimated in the liver tissues of hyperlipidemic rats.

Results: Result of the study suggested that treatment with ML 750 mg/kg/day significantly (p0.01) lowered the level of serum cholesterol, triglyceride phospholipids and increased in lecithin-cholesterol-acyltransferase activity and post-heparin lipolytic activity compared to Triton-treated rats. In addition, ML 750mg/kg/day significantly (p0.01) reduces oxidative stress and normalizes the activities of SOD, CAT, GPx and GRh compared to Triton-treated rats.

Conclusion: The current study provides strong evidence that intragastric administration of ML 750 mg/kg/day has a beneficial effect in treating dyslipidemia with decrease in oxidative stress.

Biography

Abhijit Shirao has completed his MPharmacy in Pharmacology from NMIMS University, Mumbai. He has an experience of 1.5 years in Clinical R&D and 6 years of academic experience. Currently, he is working as an Assistant Professor at P. Wadhvani College of Pharmacy, Yavatmal, India. He has interest in developing medicines from herbal origin which are cheap and having less adverse effects and is studying herbs for their possible antidiabetic and antihyperlipidemic activity.

abhishirao@gmail.com

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