

## MODY & Homoeopathy

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### ABSTRACT

Maturity Onset of Diabetes of the Young (MODY) is neither Type 1 nor Type 2 Diabetes. It is another type of diabetes mellitus driven by genetic factors affecting Hepatic Nuclear Factors (HNF). The lead author has written about Type 1, Type 2 & Type 3 diabetes & the role of Homoeopathy to deal with these three types of diabetes.

In the current article, the lead author focuses on another type of diabetes besides these three types & the roles of homoeopathy in this 4<sup>th</sup> type of diabetes. This 4<sup>th</sup> type is MODY. This diabetes is critical as it affects the young which we call as the Demographic Dividend (DD). This young population is called as demographic dividend or bonus as among all sections of population, this is the working group & that's why they are a bonus as they earn & contribute to the growing economy.

he article discusses the epidemiology, patho-physiology, prevention, control & treatment of MODY especially at the global & national level. Thereafter, it discusses the integration of homoeopathy in to the MODY domain. The properties regarding the Essential Medicine (EM) & how these properties are aligned with the homoeopathic therapeutics are discussed.

A suggested treatment protocol based on homoeopathic therapeutics is given at the end of the article after focusing on the burden of MODY at national level through data from large scale surveys. In that section, the benefits that are to be accrued as a result of homoeopathic integration is also touched upon.

**Keywords:** MODY, Hyperglycemia, Homoeopathy, Miasms, Materia Medica

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## INTRODUCTION

Diabetes characterized by hyperglycemia also occurs due to metabolic disorders that contribute to high sugar levels. On analyzing the causes of diabetes, one can see that one cause is defect in insulin secretion while the other is in insulin action. All the classifications of the diabetes bank upon these two basic distinctions [1-3].

Insulin secretion takes place in the  $\beta$  cells of the pancreas in the islet of Langerhans. In this case, defective insulin action receptors & transporters have a role. The role of receptors is particularly crucial in Type 2 Diabetes Mellitus (DM). Here, it is also crucial to detail out the structure of the hormone Insulin. The insulin molecule has four components in its pre-pro-insulin state. When one amino acid is removed from the pre-pro-insulin state, it transforms into pro-insulin. This state has A, B & C peptides. After that, enzymes having specific roles cleaves or breakdown pro-insulin to produce mature insulin. In mature insulin, the A & B chains are connected by a disulfide bond while eliminating C-peptide. Each of the mature insulin contains one C- peptide [1-3].

Measuring the C-peptide level is an important indicator of the amount of insulin released. This indicator holds clinical relevance most importantly in the diagnosis of Poly Cystic Ovarian (PCO) Syndrome. In PCO syndrome, there is cyst formation & the release of androgenic hormones as a result of the heightened sensitivity of follicular cells to insulin. When the cyst in ovary is confirmed in a female patient, it is imperative to assess insulin levels through measurement of C-peptide. This assessment aids to effective management, monitoring & prognosis of the patient [1-3].

## PATHO-PHYSIOLOGY

When a  $\beta$  cell undergoes depolarization, which is triggered by the peculiar nature of the electrolyte potassium, insulin is released. After a meal, glucose enters the cells thereby starting the internal metabolic cycle. As glucose is digested, production of Cyclic Adenosine Mono-Phosphate (CAMP) starts thereby causing depolarization. Following this, the calcium channels open up that facilitates the release of insulin. During this process, a vesicle emerges, it opens up & expels insulin products along with other proteins [2,3].

In Type 1 diabetes, an antigen called as Islet Cell Anigen (ICA) is produced thereby eliciting an attack from the immune system in response.  $\beta$  cells release insulin & the target tissue has an insulin receptor. The attachment of insulin to receptor starts signal transduction & emergence of Glucose Transporter 4 (GLUT 4) receptors on cell surface happens. Glucose channels are now made available & the metabolism of glucose starts. This is the outline of the mechanism through which insulin effectively transports glucose into the cells. Pathological complications of diabetes

are due to lots of glucose in the blood. Lots of glucose initiates the non-enzymatic glycation that affects the function of protein thereby leading to complications in diabetes [2,3].

In Type 1 DM, the ratio is 3 men to 2 women although autoimmune diseases are more common in women. This is an autoimmune disease where propensity for disease is higher in men. Some genetic issues involve molecular structure of insulin molecules due to polymorphism. Polymorphism allows such molecular structure to be in attendance without any action. Some viral infections trigger the immune system & destroy  $\beta$  cells & hence Type 1 DM occurs [2,3].

In case of increased thyroid activity, liver function is also increased & the liver produces more glucose. This process leads to increase in Gastro Intestinal (GIT) function & absorption of more glucose. It stimulates the pituitary gland through the hypothalamus & release thyroid hormones. The process also releases neuro-peptides for appetite each time hypothalamus tells pituitary to up-regulate the thyroid that also up-regulates appetite. Hence, a person with hyperthyroidism eats more because the person's stomach receives signals from the hypothalamus of the brain [2,3].

## ABOUT MODY

Among populations, about 80% of people develop T2DM. About 10% develop T1DM & the remaining 10% develop all other types of T2DM. From this group, MODY is the most important of these all. MODY is neither T1 nor T2 diabetes. This type is driven by genetic factors that affect Hepatic Nuclear Factors (HNF). In MODY cases, there is an absence of auto antibodies targeting insulin, islet cell antigens/Glutamic Acid Carboxylase Antigens that are typically involved in T1 DM [1-3].

MODY cases insulin resistance & administration of insulin to such cases results in proper functioning. Peripheral tissues in these individuals show no resistance to insulin. Instead, there is a lower production of insulin. In MODY cases, insulin resistance develops slowly between the ages of 20 to 30 years. Changes in dietary habits in MODY cases may need increased food, require more insulin & hence leading to T2DM [2,3].

## WAY OUT

Populations should cut on carbohydrates & use appropriate medicines to remove glucose to avoid glucose peaks. Comprehending the intricate mechanisms of diabetes enables individuals to make informed decisions. That's how the importance of early detection & management is very crucial [1-3].

## Burden of the problem at National Level (Table 1)

**Table 1.** Prevalence of Blood Sugar among adults in India [4].

Indicator	Gender	Urban	Rural	Total
Percentage of Women age 15 years and above who have high blood sugar level (141-160mg/dl)	Female	6.7	5.9	6.1
Percentage of Women age 15 years and above who have very high blood sugar level (>160mg/dl)	Female	8.0	5.5	6.3
Percentage of Women age 15 years and above who have high or very high blood sugar level(>140mg/dl) or taking medicine to control blood sugar level	Female	16.3	12.3	13.5
Percentage of Men age 15 years and above who have high blood sugar level (141-160mg/dl)	Male	7.8	7.0	7.3
Percentage of Men age 15 years and above who have very high blood sugar level (>160mg/dl)	Male	8.5	6.5	7.2
Percentage of Men age 15 years and above who have high or very high blood sugar level(>140mg/dl) or taking medicine to control blood sugar level	Male	17.9	14.5	15.6

This reflects the magnitude of the problem in the country from the perspective of the young adult group as diabetes is a metabolic disorder with an altered metabolism in the body. The data shows that males are more diabetic than females in India [4].

The MODY cases will be a sub group from this lot. If this lot is prevented from diabetes, the MODY cases will also decrease gradually & eventually [2-4].

Government of India launched the National Program for Prevention & Control of Cancer, Diabetes, Cardiovascular system & Stroke (NPCDCS) in 2010. The nation will benefit if the homoeopathy of AYUSH is integrated into this program.

As per the Lancet, currently 10% of the population use homoeopathy in India. As the projected population is 130 crores or 1300millions, 13 crores or 130millions can be saved from MODY upon integration of homoeopathy in NPCDCS [5,6].

#### **HOMOEOPATHIC APPROACH**

Integration of homoeopathy in MODY follows a miasmatic, constitutional, clinical/therapeutic approach where a multipronged approach is suggested [7-10]. As mentioned above, Hepatic Nuclear Factors (HNF) are affected in MODY cases. Hence, drugs addressing genetic issues, production of insulin, reducing insulin resistance are suggested here [11-20].

The first is the miasmatic approach. When genetic issues affect the body, the miasm is 'Psora' as the functional plane is disturbed here in the body. This is the 'Carbo-Nitrogenoid' constitution acting on the body where there is excess of carbon & nitrogen in the body. This brings out the functional changes in the body. Here, the body needs antisporics in the form of homoeopathic medicines [11-20].

As the body undergoes inflammation & swellings, the 'Sycotic' miasm takes place. This is line with the osmotic pull & water absorption in the body. This is the 'hydrogenoid' constitution working in the body. An example mentioned above is the condition of PCO. Here, antisycotic homoeopathic medicines are needed [11-20].

When the degenerative process starts in the body through destruction in tissues & organs, the miasm acting in the background of this destruction is 'syphilis'. This is the oxygenoid constitution where the raw oxygen acts as the free radicals & destroys tissues. Here, the body needs anti-oxidants & anti-syphilitic medicine from homoeopathic material medica [11-20].

Given below is the homoeopathic treatment protocol based on the modalities of MODY. The first modality is genetic issues. The related medicines are 'Phlorizin', 'Anterior Pituitary', 'Syphilinum', 'Leuticum', 'Boron', 'Thymus Gland' [11-20].

The second modality is production of insulin. Here, the related medicines are 'Insulin', 'Pancreatinum', 'Iris Ver', 'Calcarea Ars', 'Iodum', 'Phaseolus', 'Acid Lactic', 'Kali Aceticum' [11-20].

The third modality is insulin resistance. Here, the related medicines are 'Trigonella Foenum- Graecum', 'Moringa Olifera', 'Alloxan', 'Chromium' [11-20].

The fourth modality is on the issue of Hepatic Nuclear Factor'. It relates to regeneration of liver cells. Here the related medicines are 'Taraxacum', 'Ferrum Iod', 'Ferrum Ars', 'Myrica', 'Cardus Mar', 'Tillandsia U', 'Angelica A' [11-20].

As mentioned above, there are conditions that contribute to diabetes. One is repeated viral infections. Just as homoeopathy is potential against all viral infections & this has been proved implacably in the COVID-19 pandemic [7-10].

Another condition is hyperthyroidism that contributes to diabetes. Here, the homoeopathic medicines are 'Mag Flour', 'VAB', 'Aurum Iod', 'Hypothalamus', 'Sulphanilamide' [11-20].

## CONCLUSION

MODY is not a simple issue. It affects the young population & that too the disease is also a life- long process. The young generation has to adapt the healthy life style, consume a diet

that includes variety of cereals, pulses, green vegetables, green leafy vegetables & fruits.

Along with physical health, mental health is also equally important. As homoeopathy therapeutics is based on individualization, the holistic concept of health is followed. The holistic approach has the physical, mental & emotional health components [21].

The young are the dividend population group. If they are affected by diabetes, the dividend will change to a burden. As the burden group is on an increasing trend in the nation with more geriatrics, the nation cannot bear the burden through young population that are affected by diabetes & are labeled as MODY cases [1].

## DECLARATION OF THE LEAD AUTHOR

Prof. Shankar Das, a co-author of the current article was the Ph.D. guide of the lead author at Tata Institute of Social Sciences, Mumbai. Prof. D.P. Singh was the teacher of the lead author at TISS, Mumbai during 1995-1997. The lead author also certifies that he has expressed his personal opinion based upon his public health and clinical experiences. The treatment approach or the medicines suggested are only suggestive in nature.

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