CHAPTER 1

Introduction

1.1 Diabetes mellitus (DMs)

Diabetes mellitus is an endocrinometabolic disorder propertised by incremental in blood glucose level, altering of carbohydrates, fats and proteins metabolism shows degrades in insulin synthesis, emissions and action or both i.e., Elevated fasting and post-prandial blood glucose levels. If this altered homeostasis not returns to normal and so continues for a protracted period of time, it causes hyperglycemia which is called diabetes mellitus [211].

DMs are a ‘maharogaa’ due to maximal human body cells may affect. ‘Sweetness of urine’ and excess of micturition are not only the major symptom but also the disease with disturbance of the body’s five sheaths,

1) Kosha of Annamaya {sheath of Food }
2) Kosha of Pranamaya {sheath of Energy }
3) Kosha of Manomaya {sheath of Mind }
4) Kosha of Vijnanamaya {sheath of Intellectual }
5) Kosha of Anandamaya {sheath of Bliss }.

The words “diabetes ” (Greek word) = “to siphon or drain off” and “Mellitus” (Latin word) = “Sweet”

1.2 History of DMs:

1500 BCE: DMs is first described in Egyptian manuscript as “too great emptying of the urine.” believed to be of type 1 DMs (T-1 DMs) and it was known a “madhumeha” or “honey urine” by Indian physicians (attract ants).
230 BCE: "Diabetes (to pass through)" a Greek Apollonius of Memphis. DMs was rare during the period of Roman Empire, Galen had seen only 2 patients in his career.

1st century: The Greek physician ‘Aretaeus of Cappadocia’ noticed the maximal quantity of urine, excreted via kidneys named as “diabetes”.

400-500 AD: Indian Practioner, Sushruta & co identified T1, T2 DMs with separate conditions, T-1 in youth and T-2 in overweight.

980–1037: In medieval Persia, Avicenna had proposed a wide note on DMs in “The Canon of Medicine”, "mentioning the abnormal of appetite and sexual functions collapse,” with ‘the sweet taste of urine’. He recognized primary and secondary DMs, detailed diabetic gangrenee, and he gave treatmentby ‘Lupine, Trigonella (Fenugreek) mixture, this treatment is still in practice.

Late 1700s: Britain John Roll termed as "mellitus" or "from honey"

1776: Matthew Dobson realized the ‘sweet taste due to a kind of sugar’ in urine and blood.

1869: P. Langerhans (anatomist) discovered the islets of Langerhans and identified key cells in pancreas which produce the main substance which controls FBG limits. The Chinese, Japanese and Korean noted the sweetness of urine and words for diabetes as "sugar urine disease".

Sir EAS-Schafer suggested as dia-patients were deficient by the pancreas-insulin, (Latin insula, = island, produced by islets of Langerhans.

1921-1922: Frederick Banting and Charles Best showed the effective treatment with insulin in 1921 and 1922.
1922: The metabolism wasn’t clarified till 1921, when Sir FG. Banting & CH. Best repeated experimental works of Von Mering and Minkowski; diabetes induced by an extract from the pancreatic islets to healthy dogs. Banting, Best, and colleagues (Chemist Collip) studied on to purify insulin from bovine pancreases (University of Toronto). The first patient was treated with insulin. Banting and laboratory director John MacLeod received the Nobel Prize in Physiology of Medicine (1923). The chemical structure first discovered by Sanger.

November 14th: So that Bantings Birthday November 14th is honored by World Diabetis Day,

1995: sanger's group in Cambridge identified the amino acid sequence of insulin which consists of A (21 AA residues) and B (30AA residues) peptide chains.

1.3 Herbal medicine (HMs)

HMs is the oldest medicine intended for the cure of mankind. The traditional plants and natural products are being used for prevention, reduction, and cure of diseases, which was the approach of primitive healthcare system. HMs is the source of the many working physicians of original system of medication above ten decades. They are nutritionally or medicinally improved with wellbeing advantages which are recently originated and marketed in urbanized countries. Herbal drugs have been the predecessors of all medicines. Mankind have used several HMs to cure several diseases and relieve from physical sufferings due to the chemical constituent of the herbs, the active ingredients present in the parts of living plants helps for their growth functions and hence better compatibility with the human body. The knowledge of herbal drug was very innovative and critical since the ancient times. HMs is also in vast need in the urbanized countries for crucial health care beneficiary factors like efficacy, safety and less significant side effects and culture suitability. They also recommended for their beneficial properties for many age-related disorders like Remembrance failure, Osteoporosis, Resistant disorder, Memory supress, Dia-wounds, Immune and Hepato disorders etc., [19, 209].
The primary health care in most of these old civilized societies depends on herb based medicines. In India, in spite of large biodiversity, its rich customary awareness and heritage of HMs have a very less contribute to global market due to export of semifinished extracts. At present several developing countries are following organized and profound system of HMs such as Ayurveda, Siddha and Unani. Thousands of plants were used from wild sources in traditional medicine. Herbal medicine plays an important role along with modern medicine in health care of all sectors of people. Today in many countries are following the HMs and 30 % of pharmaceutical ingredients are from plants sources [209].

Recently estimation was carried out by WHO showed that 80% of population use HMs for principle health care globally. The cost of modern medicines along with interest towards herbal medicine has increased the usage of HMs over the past 30 years. Aspirin, Atropine, Digoxin, Quinine, Colchicine, Morphine, Vincristine and Vinblastine are some of the examples of what medicinal plants have given us in the past [70]. However, in 1991 WHO developed some guiding principle for measurement of HMs and also some Suggestions for HM consistency are outlined

The World Health Organization (WHO) has lately classified the conventional medication which (including herbal drugs) comprises of beneficial practice till this day, otherwise the conventional medicines are the production of beneficial experience of generation of working physicians of original systems of medicine. The conventional preparations include medical plants, natural resources, organic substance, etc. Herbal drugs comprise only those HMs which first and foremost use HMs preparations for treatment. The current notes evidence of HMs utilization in India, China, Egypt, and Rome text date back to about 500 decades. Indian traditional texts comprise of some Vedas like Rigveda, Atharvanaveda, Charaka Samhitam and Sushruta Samhitam. The herbal medicine/conventional medicaments, resultant from rich customs of ancient civilization and scientific inheritance [209].
The use of HMs to the sustenance of the health for the treatment of minor disorder, and cost for personal health sustenance. In addition use of HMs in the grown communities been recognized and this can be seen by the HMs.

Today about 1500 medicinal plants species are being used in most of the countries like Albania, Bulgaria, Croatia, France, Germany, Hungary, Spain, Turkey and United Kingdom.

These drugs are made from renewable raw material resources by eco friendly process and will bring cost-effective richness to the enough rising of these unprocessed materials.

In last part of twentieth century, western nations concluded the importance of herbal medicine as the one that possesses best health benefits with less adverse effects and countries like USA, UK, Australia, and other European countries have preferred this herbal medication. Herbal drugs are recently prepared mostly by environmental processes from various parts of plants and can be defined as preparations containing active constituents of medical importance.

The use of HMs in the management of various illnesses is due to their phyto chemical active constituent presented in it. It is expected that there are 2.5-5.0 lakhs genus of plants on the earth, among of this nearly 10% are used for food (human and other species), and high proportion of them are utilized as HMs. Currently several compounds are being isolated from HMs which are in different stages of possible drug development. Where the traditional HMs which serves as lead compounds could reduce the discovery and invention of modern medicines with original structures which will be much economic and minimal time consuming for processing with novel technology.

Most of the herbs and species are used by human according to time, which yield useful medicinal ingredients. The right way usage of HMs provides more effective, lesser side effects and safe for many ailments. The effectiveness of the HMs differs, based on
➢ Hereditary variation of the HMs
➢ Rising condition of the herb
➢ Time of cultivation and collection
➢ Harvesting method
➢ Exposure of HMs to air, light and moisture
➢ Type of protection of the herb (fertilizers used).

The traditional systems of medicine re-established globally due to present technological benefits. The herbal research procedure are starting from

1) Isolation and identification of active ingredient

2) Bioassay for capability testing

3) Pharmaceutical dosage formation

4) Study of

   ▪ Pharmacokinetic
   ▪ Pharmacodynamics
   ▪ Toxicological
   ▪ Mode of action [209].

HMs can be,

1) Used for curing purposes and to facilitate wellness
2) Not addictive or habitual forms
3) Existing nutritional agents that support the growth of body physically
4) Body balancers and help to control body functions
5) Natural therapy supports equilibrium process of our body.

This is upcoming awareness of role and practice of integrated medicine in the field of hormonal disorders. The medicinal plants to combat the diabetic with lesser side effects [170].