1. INTRODUCTION

1.1 TRADITIONAL SYSTEMS OF MEDICINE

Traditional medicine also known as indigenous or folk medicine comprises of knowledge systems that developed over generations within various societies before the era of modern medicine.

The World Health Organization (WHO) defines traditional medicine as, the sum total of the knowledge, skills and practices based on the theories, beliefs, and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement or treatment of physical and mental illness.[1]

In some Asian and African countries, up to 80% of the population relies on traditional medicine for their primary health care needs. When adopted outside of its traditional culture, traditional medicine is often called complementary or alternative medicine.

The WHO notes however that "inappropriate use of traditional medicines or practices can have negative or dangerous effects" and that "further research is needed to ascertain the efficacy and safety" of several of the practices and medicinal plants used by traditional medicine systems.[1] Core disciplines which study traditional medicine include herbalism, ethnomedicine, ethnobotany, and medical anthropology. Traditional medicine may include formalized aspects of folk medicine, that is to say longstanding remedies passed on and practiced by lay people. Practices known as traditional medicines include Ayurveda, Siddha medicine, Unani, ancient Iranian medicine, Islamic...
1.2 SIDDHA SYSTEM OF MEDICINE

The Siddha science is the oldest traditional treatment system generated from Dravidian culture. The Siddha flourished in the period of Indus Valley civilization. Palm leaf manuscripts says that the Siddha system was first described by Lord Shiva to his wife Parvati. Parvati explained all this knowledge to her son Lord Muruga;

He taught this to his disciple sage Agasthya. Agasthya taught 18 Siddhars and they spread this knowledge to all the human beings4.

The word Siddha comes from the word Siddhi which means an object to be attained perfection or heavenly bliss. Siddha focused to "Ashtamahasiddhi," the eight supernatural power. Those who attained or achieved the above said powers are known as Siddhars. There were 18 important Siddhars in olden days and they developed this system of medicine. Hence, it is called Siddha medicine. The Siddhars wrote their knowledge in palm leaf manuscripts, fragments of which are found in parts of South India. It is believed that some families possess more fragments but keep them solely for their own use. There is a huge collection of Siddha manuscripts kept by traditional Siddha families5.

According to the manikuttan, there were 22 principal siddhars. Of these 22, Agasthya is believed to be the father of siddha medicine. Siddhars were of the concept that a healthy soul can only be developed through a healthy body. So they developed methods and medication that are believed to strengthen their physical body and thereby their souls. Men and women who dedicated their lives into developing the system were
called *Siddhars*. They practiced intense yogic practices, including years of periodic fasting and meditation and were believed to have achieved supernatural powers and gained the supreme wisdom and overall immortality. Through this spiritually attained supreme knowledge, they wrote scriptures on all aspects of life, from arts to science and truth of life to miracle cure for diseases.⁶

From the manuscripts, the siddha system of medicine developed into part of Indian medical science. Today there are recognized siddha medical colleges, run under the government universities, where siddha medicine is taught.

Siddha medicine means medicine that is perfect. Siddha medicine is claimed to revitalize and rejuvenate dysfunctional organs that cause the disease and to maintain the ratio of Dosha *Vaadham, Pittham* and *Kabam*. The siddha medicine given to practitioners include leaves, flowers, fruit and various roots in a mixed basis metals and minerals.⁷

Most of the practicing Siddha medical practitioners are traditionally trained, usually in families and by gurus (teachers). They make a diagnosis after a patient's visit and set about to refer to their manuscripts for the appropriate remedies, which a true blue physician compounds by himself or herself, from thousands of herbal and herbo-mineral resources. The methodology of siddha thought has helped decipher many causes of disorders and the formulation of curious remedies which may sometimes have more than 250 ingredients.⁸

**CONCEPT OF DISEASE AND CAUSE**

It is assumed that when the normal equilibrium of the three humors (*Vaadham, Pittham* and *Kabam*) is disturbed, disease is caused. The factors, which assumed to affect this equilibrium are environment, climatic conditions, diet, physical activities and stress.
Under normal conditions, the ratio between these three humors i.e.: (Vaadham, Pittham, Kabam) are 4:2:1, respectively. According to the siddha medicine system, diet and lifestyle play a major role, not only in health but also in curing diseases. This concept of the siddha medicine is termed as pathiyam and apathiyam, which is essentially a list of "do's and don'ts".

**DIAGNOSIS**

In diagnosis, examination of eight items is required which is commonly known as "enn vakaith thervu". These are:

1. Na (tongue): black in Vaatham, yellow or red in pitham, white in kabam, ulcerated in anaemia.
2. Varnam (colour): dark in Vaatham, yellow or red in pitham, pale in kabam.
4. Kan (eyes): muddy conjunctiva, yellowish or red in pitham, pale in kabam.
5. Thodal (touch): dry in Vaatham, warm in pitham, chill in kapha, sweating in different parts of the body.
6. Malam (stool): black stools indicate Vaatham, yellow pitham, pale in kabam, dark red in ulcer and shiny in terminal illness.
7. Neer (urine): early morning urine is examined; straw color indicates indigestion, reddish-yellow color in excessive heat, rose in blood pressure, saffron color in jaundice, and looks like meat washed water in renal disease.
8. Naadi (pulse): the confirmatory method recorded on the radial art.
DRUGS USED IN SIDDHA SYSTEM OF MEDICINE

The drugs used by the Siddhars could be classified into three groups: thavaram (herbal product), thadhu (inorganic substances) and jangamam (animal products). The Thadhu drugs are further classified as: uppu (water-soluble inorganic substances or drugs that give out vapour when put into fire), pashanam (drugs insoluble in water but emit vapour when fired), uparasam (similar to pashanam but differ in action), loham (insoluble in water but melt when fired), rasam (drugs which are soft) and ghandhagam (drugs which are insoluble in water, like sulphur).

The drugs used in siddha medicine are classified on the basis of five properties: suvai (taste), gunam (character), veeryam (potency), pirivu (class) and mahimai (action).

According to their mode of application, the siddha medicines could be categorized into two classes:

- **Internal medicine** was used through the oral route and further classified into 32 categories based on their form, methods of preparation, shelf-life, etc.

- **External medicine** includes certain forms of drugs and also certain applications (such as nasal, eye and ear drops), and also certain procedures (such as leech application). It also classified into 32 categories.

TREATMENT METHODOLOGY IN SIDDHA SYSTEM OF MEDICINE

The treatment in Siddha medicine is aimed at keeping the three humors in equilibrium and maintenance of seven elements. So proper diet, medicine and a disciplined regimen of life are advised for a healthy living and to restore equilibrium of humors in
diseased condition. Saint Thiruvalluvar explains four requisites of successful treatment. These are the patient, the attendant, physician and medicine. When the physician is well-qualified and the other agents possess the necessary qualities, even severe diseases can be cured easily, according to these concepts.

The treatment should be commenced as early as possible after assessing the course and cause of the disease. Treatment is classified into three categories: devamaruthuvum (Divine method); manuda maruthuvum (rational method); and asura maruthuvum (surgical method). In Divine method, medicines like parpam, chendooram, guru, kuligai made of mercury, sulfur and pashanams are used. In the rational method, medicines made of herbs like churanam, kudineer, or vadagam are used. In surgical method, incision, excision, heat application, bloodletting, or leech application are used\textsuperscript{14-15}.

According to therapies the treatments of siddha medicines could be further categorized into following categories such as purgative therapy, emetic therapy, fasting therapy, steam therapy, oleation therapy, physical therapy, solar therapy, blood-letting therapy, yoga therapy, etc\textsuperscript{16}.

1.3. DIABETES MELLITUS

Diabetes is a metabolic disorder in which a person has high blood sugar level because either the pancreas does not produce enough insulin or cells do not respond to it. Normally after intake of food, it breaks down into glucose – the main fuel for energy in human body. Insulin in pancreas is produced and released to transport the glucose into the cells. Usually pancreas automatically produce insulin according to the glucose level. But in
people with diabetes, the pancreas produce little or no insulin or the cells become resistant to insulin produced.

Normally the glucose levels are 80-100 mg/dl (Fasting) and below 140 mg/dl after 2 hours of meals (PPBS), HbA1C- 4%-6%. In Pre-diabetics, Fasting Blood Sugar :110-125 mg/dl, PPBS : 140-160 mg/dl, HbA1c :5.7%-6.4%. In Diabetics, Fasting Sugar : Above 126 mg/dl, PPBS : Above 180 mg/dl;HbA1c : Above 6.5%\textsuperscript{17-20}.

**Types of Diabetes mellitus :**

According to modern concept:

Diabetes is of three types\textsuperscript{21}:

1. **Type 1 or Insulin Dependent Diabetes Mellitus** : Known as Juvenile diabetes Mellitus. 5-10% cases are diagnosed as Type 1. It is an autoimmune disorder when the immune system goes against its own self causing destruction of the pancreatic cells that produce insulin. Seen usually in children. Increased urination, increased thirst, weight loss are usually seen. No family history generally present. Insulin shots are given usually in modern medicine.

2. **Type 2 or Non Insulin Dependent Diabetes Mellitus** : Most common type. Slow onset with symptoms like increased thirst, increased urination and weight loss. Usually these people are obese with sedentary life style and a strong family history. Due to ineffective glucose metabolism, the body uses alternatives like fat metabolism to produce energy leaving the person tired and fatigue seen.

3. **Gestational Diabetes** : Seen during pregnancy. About 3-5% ladies have chances to develop Gestational diabetes. This happens when the body does not make enough insulin or resist direct action of insulin due to hormones. These patients have 40%
chances of developing Type 2 Diabetes if they are obese or have irregular food habits. Diet management alone manages this condition well. Insulin is sometimes given.

**Other symptoms**:

- **Polydipsia (Increased thirst)**: The concentration of glucose in blood makes the brain send signals for dilution of blood hence one feel the urge to drink more water.
- **Polyphagia (Increased appetite)**: Insulin also responsible for hunger, increase insulin level stimulates hunger and desire to eat more.
- **Polyurea (Increased Urine output)**: Body tries to get rid of increased blood sugar and thus increased urine is seen to eliminate the extra glucose from the body making the sufferer dehydrated and tired.
- **Weight fluctuation**: Earlier seen as weight loss due to utilization of fat from body for energy, later weight gain occurs due to increased appetite.
- **Blurred vision**
- **Irritability**
- **Infections**: UTI and Skin infections seen usually.

**Poor wound Healing**: Increased blood glucose inhibits WBC responsible for immunity of the body, delays the healing power.

**Complications**: Untreated Diabetes may lead to irreversible damage to the Eyes (Retinopathy), Kidneys (Nephropathy), Nerves (Neuropathy), Heart (Heart Attack) and Feet (Diabetic Foot).
Managing Diabetes Mellitus:

Both Type 1 and Type 2 Diabetes can be managed through diet, Exercise, Routine check up and Medicines.

- **Diet** : A balanced diet with veggies, fruits, whole grain, beans, fish, lean mean meat, non fat dairy, fiber rich food like salad is suggested. Frequent and portion meals is the best. It is myth that diabetics have to cut off sugar completely. One can take sugar and curb in permissible limits.

- **Exercise** : Exercise increases the blood sensitivity to insulin stimulates muscle to use glucose. 15 minutes before exercise, diabetes should have some snacks or fruits else the sugar may dip making him/her hypoglycemic.

- **Routine Check up** : Record of sugar level and plan of diet accordingly will be useful for management of diabetes mellitus.
Management of Diabetes mellitus in modern medicine and its advantages and disadvantages

Management of Diabetes Mellitus through Siddha system of medicine

In Siddha system of medicine, many single and polyherbal formulations and higher medicines like parpam, chendooram and chunnam have been practiced to cure or control diabetes mellitus from time immemorial. In modern medicine no satisfactory effective therapy is still available to cure
diabetes mellitus. There is increasing demand by patients to use natural products with anti-diabetic activity due to side effects associated with the use of insulin and oral hypoglycemic agents. Recent overwhelming attention to plant products and alternative medicine has encouraged plant chemists, pharmacologists, biochemists and molecular biologists to combine their efforts in a search for natural agents that can limit diabetes mellitus and its complications.

**Herbs and herbal formulation used in Siddha system of medicines for the management of Diabetes mellitus**

**Single herbs used to manage Diabetes mellitus are:**

- *Tinospora cordifolia* or Seenthi or Amrit
- *Eugenia jambolena* or Nyaval
- *Gymnema sylvestre* or Sarkarrai kolli
- *Phyllanthus emblica* or Nellikkai or Amla
- *Aegle marmelos* or Vilvam or Bael
- *Trigonella foenum* or Methi or Venthayam
- *Curcuma domestica* or Turmeric or Manjal or haldi
- *Andrographis paniculata* or Nilavembu
- *Allium sativum* or Garlic

Siddha polyherbal formulations like Seenthil Kudineer, Seenthi Choornam, Vilva kudineer, Avarai kudineer, Madhumegha choornam, Nyavalkottai Choornam, Silasathu parpam, Abraka chendooram, Triphala Choornam etc are used in treatment of Diabetes.