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*RESEARCH ARTICLE*

# CONCEPT OF NATUROPATHYDIET AND FASTING THERAPY IN LIFE STYLE INDUCED DISEASES: A REVIEW ARTICLE

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## *Abstract*

Diet is a fundamental component of naturopathy system of medicine. It is regarded as medicine, apparent, different and significant in naturopathy. Fresh seasonal and local fruits, vegetables, green leafy vegetables and sprouts are excellent form of natural foods. Being alkaline in nature, purifies the body, and improves the health and immunity.Fasting is first choice of treatment in this system and can be defined as "total rest; physical, physiological, sensory and mental rest, which includes voluntary total abstinence from intake of any kind of food, solid or liquid that demands digestion, except water, for a definite purpose and period of time.Fasting and naturopathy diet are vital treatments in life style induced diseases which occur due to the unhealthy behaviours, other factors like person's habits, behaviours and practices.Naturopathy diet –a holistic diet, enhances healing capacity and acts as a natural healing method for various lifestyle diseases and fasting stimulates the vital protective mechanisms which helps in the prevention and management of diseases and encourages a healthier life.



## Introduction:-

Naturopathy is a unique systemofhealth care medicine that includes various treatment modalities with scientific advances and current research [(1)].It can be defined as a system of medicine to cure the diseases by encouraging natural curative reactions inherent in every diseased cell through methods and treatments based upon the fundamental laws which govern health [(2)]. Naturopathy clinically functions on non-drug based treatments which includes lifestyle oriented self-care, preventive behaviours, physical activities, yoga therapy, Hydrotherapy, Manipulative therapies, Acupuncture, and stress management counselling and Fasting therapy, clinical diet and nutrition by targeting pharmacological actions by nutrients for specific diseases irrespective of nutritional status[(3,4)].

Hence diet is an important component of naturopathy system of medicine. Food is regarded as medicine in many systems of medicine but it is more apparent, different and significant in naturopathy. This system known for promoting the food in more natural way and encourages to consume in natural form [(5).] Fresh seasonal and local fruits, vegetables, green leafy vegetables and sprouts are excellent form of natural foods. These foods are alkaline in nature, purifies the body, and improves the health and immunity. This considers the importance of food in naturopathy as a medicine (6).

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Fasting is the voluntary abstinence from taking solid food and stimulants for a limited period of time ant this makes to experience one good vitality and absence of hunger [7]. It is practised widely in India not only as a treatment option but also as a discipline [8]. According to Naturopathy system of Medicine fasting is first choice of treatment. It can be defined in naturopathy as "total rest; physical, physiological, sensory and mental rest, which includes voluntary total abstinence from intake of any kind of food, solid or liquid that demands digestion, except water, for a definite purpose and period of time[9].

Life style induced diseases occur due to the unhealthy behaviours, other factors like person's habits, behaviours and practices. Two types of risk variables will classify lifestyle diseases: factors that can be modifiable like diet and body weight, engage in physical activities, sunlight exposure, alcohol, tobacco abuse; factors which are modifiable like age, gender, heredity [10]. The common life style diseases are atherosclerosis, heart diseases, stroke, obesity, diabetes mellitus and diseases associated with smoking, alcohol and drug abuse [11].

Naturopathy is a practice which follows a route of 'self-healing' and believes in the power of human bodies to fight diseases without the use of any medications. Since the lifestyle diseases are mostly caused by poor diet and lack of physical activity. An individual can be free from any kind of lifestyle disease and can live a healthier life by altering his diet to improve the digestive system. Hence naturopathy diet and fasting therapy has specific role in treating and preventing the lifestyle diseases.

**Naturopathy Diet:**

It is one of the important modality under Naturopathy system of medicine which encourages food to be taken in only in natural form. Foods like fresh seasonal fruits and vegetables, green leafy vegetables and sprouts are excellent sources from nature. The Naturopathy diet is broadly classified in to three categories:

1. **Eliminative diet**: Liquids, Citrus juices, Tender coconut water, Vegetable soups, Butter milk.
2. **Soothing diet**: Fruits, salads, sprouts and vegetables, boiled or steamed vegetables
3. **Constructive Diet**: boiled food- wholesome flour, unpolished rice, little pulses, sprouts, curd etc...

These diets are purely alkaline in nature and purify the body, and leads to positive health. According to the naturopathy medicine to protect the health the diet should made of at least 20% acidic (boiled) and 80% (unboiled) food [12].

Naturopathy food has remedial value because it supplies alkaline elements in organic form and it has the ability to cure the diseases, when it selected properly, combined rationally and taken in right proportion. These vital elements, salts, vitamins and minerals important to health and provides resistance to external influential factors. Accordingly the food which contains excess fat, junk foods, fried items are discouraged and healthy food like seasonal foods, green leafy vegetables, sprouts are encouraged as food items in naturopathy medicine [13]. Hence diet is considered as a single and vital component in the system of naturopathy.

**Eliminative diet:**

It is also known as cleansing diet. The food items which are beneficial in the cleansing of the system will come under the category of eliminative diet. It is applicable in the initial stages of the treatment which is more often encourages the detoxification of the body. The detoxification is a biochemical process which converts toxic state to a less toxic or non-toxic form. The eliminative diet eliminates the morbid matter and toxins from the body which is the cause of all diseases, through the activation or stimulation of eliminatory organs like kidneys and intestines. The eliminative is very near to fasting. Therefore the food stuffs like citric juices, lemon water, and tender coconut water are generally prescribed in eliminative diet[13, 14].

**Soothing Diet:**

Soothing diet is given after the second stage of treatment, when the body is almost cleaned and detoxified. Patients are kept on this type of diet for a period of days which provides slightly filling. This particular diet includes fruits, salads, sprouts, soups, buttermilk, vegetables, thick juices etc. [13, 14]

**Constructive Diet**

When the body is fully detoxified and cleaned, constructive diet is prescribed. It is considered as third phase of treatment during which patient is free of disease condition. In this process new blood, lymph, and building cells are

build up normally. The food items included in this category are wholesome flour, unpolished rice, pulses, sprouts, etc. This diet overall improves immunity, health and purifies and helps in the detoxification of the body [13, 14].

**Role of Fasting therapy in naturopathy system of medicine:**

Fasting is one of the important treatment modality of diseases. Naturopathy believes that the cause of all disease is accumulation of morbid matter and fasting is very beneficial in the elimination of morbid or toxic materials from the body. It provides complete rest to the gastrointestinal system, and the body uses its vital energy for the process of elimination during fasting [15].

The fasting can be practised therapeutically as dry fast, water fast and juice fasts. It is regarded as safe and effective intervention which helps the body to eliminate the accumulated toxins from the body. This detoxifying process can be quickened by drinking alkaline juices freshly prepared from fruits and vegetables [16, 17].

Fasting makes one to feel good vitality and absence of hunger. This involves individual in all its dimensions like body, soul, and spirit. During fasting one should consume at least 2.5 litres of low calorie liquids. The intake of approximately 250-500 kcal/day provides the stimulation of excretory organs like intestines, liver, kidney, lungs and skin [18, 19].

**Physiology of fasting**

In fasting there will be radical change in physiology and metabolism. Normally blood glucose provides adequate energy through glycolysis. In fasting the blood glucose levels will be maintained by the glycogen which will be stored in the liver and skeletal muscles [20]. The glycogen stored in the liver maintain the blood glucose in the first 24 hours of fasting. Afterwards the body uses glycogen stores from adipose tissues and then protein stores [21]. This abrupt changes in metabolism leads to glycogen depletion and it is dependent on the metabolism of triglycerides stored in the adipose tissues. Triglycerides usually separated in to free fatty acids and glycerol from which the liver converts in to ketone bodies and glucose. Ketone bodies made through the process of ketogenesis travel through the body and are reconverted back in to acetyl-CoA at the tissues requiring energy [22, 23].

Gluconeogenesis generates glucose from amino acids which are broken down from various tissues along with muscle. This is another metabolism of proteins which take place in the fasting in addition to adipose tissue metabolism. Once the glycogen stores are depleted, the body tissues dependence for glucose reduces as ketone bodies are more readily accessible to metabolize [24]. This key mechanism is known as "metabolic Switch" in which body shift from the usage of glucose from glycogenolysis, to fatty acids and fatty acid –derived ketones. Studies have shown that ketone bodies are preferred fuel for the body as well as brain during the interval of fasting [25].

**Lifestyle induced Diseases:**

Life style induced diseases are caused by unhealthy behaviours and other factors like individual's habits, behaviours and practices. These diseases are due to the two type's risk factors namely modifiable risk factors and non - modifiable risk factors. Modifiable risk factors are dietary habits, body weight, physical activity, sunlight exposure, alcohol intake and abuse of tobacco; non-modifiable factors include age, gender, and heredity [26].

Lifestyle is a method in which a person cope himself physically, socially, psychologically and economically through day to day. Life style disruption results in physical limitations and significantly leads to the development of non-communicable diseases (NCDs).NCDs can also be known as lifestyle disease. These are diabetes mellitus, obesity, cancer, cardiovascular diseases, and hypertension, stroke etc. ([27]).

Life style diseases are a major public health concern worldwide. In 2018, WHO (world health organization) estimated that 71% of all deaths globally were due to non-communicable diseases. Every year, around 15 million people between the ages of 30 and 69 years die from non-communicable diseases [28].

Lifestyle diseases are significantly linked with the person's way of living. Hence it is important to consider lifestyle risk factors which plays a role in development of diseases. The combination of healthy lifestyle factors like regular exercise, following healthy dietary habits, healthy weight maintenance and no smoking associated with reduction in the risk of developing most common lifestyle disease and these are important component for healthy living [29].

**Obesity:**

Obesity is known as excessive fat deposition in the body which impairs the health of an individual [30]. Life style changes, nutrition transition and energy balance are the major contributing factors for developing obesity in spite of genetic predisposition[31]. The prevalence of obesity has increased worldwide to pandemic proportions over the past 50 years. Currently over half a billion adults are obese. The documented global epidemic obesity has been increasing at an alarming rate, particularly in the developing countries [32].

Obesity clearly is a multifactorial disease and the fundamental cause of obesity is a long-term energy imbalance between too many calories consumed and too few calories expended [33]. It can be identified by many assessments like, anthropometric measurements which are used to assess the composition of the body and skin fold calipers and other advanced methods which are helpful to determine percent body fat [34].

Naturopathy believes that obesity occurs due to the diet and underlying imbalance in the lifestyle and this requires a proper plan of care to manage the condition [35]. A study conducted by Nutan et al reported that naturopathy diet is a reliable tool for effective weight reduction among obese patients through changing their dietary habits and intake of healthy food stuff. The food included was purely satvik (natural and simple free from strong chemicals) limited in quantity which cleanses and strengthens the physiology as a whole. This helped in reducing BMI, WHR in 60 obese individuals [36].

The naturopathic diet exhibited significant changes in the BMI, W/H ratio, MUAC along with the other biochemical parameters like lipid profile, rendered a positive influence on weight reduction. The influential role may due to the mechanisms like improving insulin sensitivity, boosting the BMR, and stimulating thermogenesis which accelerates the weight loss [37].

In fasting and in naturopathy diet the consumption of low calorie diet bring the changes in weight loss. Intake of Lemon juice during naturopathic diet and fasting contains high amount of vitamin C which is inversely related to the body mass. Lemon juice with honey reduces body weight and BMI [38].Increased intake of whole grains, fresh vegetables and fruits are beneficial in reducing body weight due to its low glycaemic intake and fruits are rich in fiber, antioxidant and phytochemicals and minerals. Similarly low fat diet and high fibre diet consumption increases satiety and decreases hunger [39]. Short term fasting for 10 days is more effective which helps in increasing beta oxidation during fasting. Calorie intake of around 450-800 kcal/day has advantage in obesity because mild ketosis formation suppresses the hunger [40].

**Hypertension**

Hypertension is a major public health concern and it is the form of cardiovascular disorder which results from comprehensive interconnected etiologies [41, 42].It is a leading modifiable risk factor for disability including stroke, heart failure and chronic kidney disease and death among the adults [43].

The evaluation of patient with hypertension, diagnosis of hypertension is the first step. As per the guidelines ACC (American college of cardiology)/AHA (American heart Association), at least two blood pressure measurement on at least two times with the use of standard measurement techniques, validated equipment and cuff of correct size [44]. The blood pressure is generally measured at the brachial artery but monitors are also available to take measurements at the wrist and finger which are inaccurate. The most common measurement is brachial auscultation by using a mercury sphygmomanometer and stethoscope listening for korotkoff sounds [45].

The treatment of hypertension comprise of both pharmacological and non-pharmacological strategies. Non-pharmacological treatment includes: dietary salt restriction (below 1500 mg per day), weight loss, physical activity, high fibre and low fat diet. Consumption of diet rich in fruits and vegetables, potassium, magnesium, calcium, low in saturated fat that is dietary approach to stop hypertension (DASH) reduces not only systolic and diastolic blood pressure but also ameliorate the endothelial function [46,47].

A naturopathy diet designed as freshly prepared, fibre rich, low glycaemic index, plant based diet which includes whole grains, legumes, vegetables and fruits which are low in fat and no added sugar ,oil and salt significantly reduced the blood pressure and the need for medications among hypertensive patients.. This diet form is in the natural form which includes high quality, protein rich sprouts, fruits and vegetable salads along with the other

naturopathic treatment. Two third of this diet is not cooked, given in the specified time to ensure that body gets in to a biological rhythm of metabolism [48].

Several earlier studies have been reported that BP levels were lower in individuals with vegetarian diet as compared to meat eaters [49]. Particularly in randomized controlled trial, fruit and vegetable consumption has been associated with decreased BP, among hypertensive patients [50, 51]. Reduction in blood pressure is hypothetically due to higher dietary fibre, vegetable protein predominantly glutamic acid, vitamin A, C, Minerals like potassium, calcium, magnesium [49, 52].

Consumption of juices are associated with lowering blood pressure. Some juices like pomegranate juice, guava fruit juice, and beetroot juice shown improvement in both SBP and DBP. The underlying mechanisms include antioxidant effects, improvement of endothelial function, and inhibition of platelet aggregation, anti-inflammation, and prevention of hyperhomocysteinemia and this is possible due to the components of raw material such as polyphenols and vitamins and minerals and presence of bioactive compound [53].

**Diabetes Mellitus**

Diabetes mellitus (DM) is a non-communicable disease characterized by chronic hyperglycaemia. This causes dysfunction in various cell types, and complications like nephropathy, retinopathy, cardiovascular disease and neuropathy. Currently there are 400 million people affected with diabetes mellitus worldwide [54, 55]. It is a disorder of metabolic process by which glucose level in the body increased from normal level due to either increased insulin secretion or inactivity of insulin or both. Aging, obesity, insufficient energy consumption, alcohol drinking, smoking, are the independent risk factors for the progression of diabetes mellitus [56].

It can be managed therapeutically by injection of insulin agents and oral administration of hypoglycaemic agents. Other alternative therapeutic regimens are medical nutrition therapy, gene therapy, lifestyle modification etc.[57].

Dietary changes and lack of physical activity are the vital factor for the increasing incidence of DM. Hence reducing weight and maintenance of healthy weight, reducing energy intake, and consumption of food rich in vegetables, fruits, whole grains, legumes, and nuts are the important aspects of the management [58].

A study reported (SrinivasBairy et al) that naturopathy diet along with other interventions significantly decreased PPBG levels, glycatedhaemoglobin levels and also reduced the need for the requirement of medications. Three month residential naturopathy interventions, especially the diet prescribed was low glycaemic index, low-salt high-fibre plant-based diet. They are whole grains, legumes, vegetables and fruits with no added oil, sugar or salt. The patients also underwent for an intermittent fasting for a period of 3 to 5 days on a naturopathy based diet rich in fruits, vegetables, sprouts, nuts, salads and juices. Naturopathy diet improves insulin sensitivity and reduces resistance in overweight. Fasting remarkably reduces the insulin levels and improves the insulin resistance. A low salt diet in naturopathy diet and active lifestylereduces the weight loss and leads the significant glycaemic control through the anti-inflammatory effect [59, 60].

Naturopathy diet which consist of whole and minimally processed plant foods are rich in antioxidants, fibre and magnesium [61]. Antioxidants like polyphenols, inhibits glucose absorption, stimulate insulin secretion, increases glucose uptake and decreases hepatic glucose output.Fibers in food regulates postprandial glucose response which is fermented by intestinal bacteria to produce short chain fatty acids , leads to the improvement in the glucose response, insulin signalling, and insulin sensitivity. Hence this diet shows favourable metabolic effects by promoting shifts in the gut microbial profile and reduces the production of trimethylamine N-oxide, a compound tied with the insulin resistance [62].

Consumption of sprouts has positive role in the management of diabetes mellitus and beneficial effects on HbA1c, FBS and HOMA-IR.Intake of 60 gm of lentil sprouts daily has favourable effects on glycaemic control. Lentils has a higher oxygen radical absorbing capacity value as compared to common fruits and vegetables. This component helps in the improvement of insulin level in the body [63].

**Cardiovascular diseases (CVD):**

Cardiovascular diseases are the leading cause of death in the world, among these ischemic heart disease and stroke are the leading causes of CVD [64]. The associated risk factors like hypertension, Diabetes mellitus, dyslipidaemia,

smoking, obesity are correlated with raised prevalence of cardiovascular diseases. The risk factors are physical inactivity, low fruits and vegetable intake and psychosocial stress, commonly seen in acute myocardial infarction cases among south Indians [65]. Along with these, genetic factors and other emerging factors like high homocysteine levels, air pollution, variations in outdoor temperatures, psychosocial factors, mental health and high C-reactive protein levels affects the prevalence of CADs [66].

Preventive strategies for cardiovascular diseases are health education, creating awareness about the etiology cardiovascular diseases, adaptation of healthy diet and regular exercises, will promote cardiovascular diseases. Dietary interventions like reducing high fat dairy, carbohydrates, saturated fats and increasing consumption of fruits and vegetables daily is one of the effective strategy [66].

Naturopathy diet salt minimal high –fibre vegetarian diet along with yogic exercises effective in control of symptoms such as angina and breathlessness, reduction of antianginal medications, better control of hypertension.PadmavathiKora et al showed that a naturopathy intervention for 3 months helped in coronary atherosclerosis regression and cardiac injury reduction. The Prescribed diet was a low-glycaemic index, salt restricted, high fibre plant based diet like whole grains, legumes, vegetables and fruits with no added oil, sugar [67].

Long term consumption of raw diet helps to reduce Serum LDL, TG, and increase in HDL in humans. Increased intake of fruits and vegetables up to 400gm or 5 portions helps to prevent CVDs. Epidemiological studies have shown that increase of 1 portion of vegetables/fruits every day associated with 6% lower risk of ischemic stroke [68].

**PCOS**

Polycystic ovarian syndrome (PCOS) is a heterogeneous endocrine disorder associated with metabolic syndrome. It is characterized by the manifestation anovulation, ovarian cyst and endocrine variation that affect health and life of a woman [69].This condition can be either morphological i.e. with presence of polycystic ovaries or it can be biochemical (hyperandrogenemia). Hyperandrogenism is considered as a clinical hallmark of PCOS which interrupts the development of follicles, micro cysts in the ovaries and menstrual irregularities [70, 71]. The associated risk factors for PCOS are poor dietary choices, physical inactivity, obesity which can be reversed with lifestyle modifications [72].

A study reported that (Venugopal et al) PCOS patients were treated with naturopathy diet and showed improvement in the symptoms like body weight, menstrual cycle pattern and ovarian morphology. The diet given was complete fruits and vegetables (carrot,cucumber,beetrootash gourd, curry leaves, green gram and ground nut sprouts,guava,melons,orange,coconut,indian gooseberry, grapes). This unique food is rich in antioxidants, vitamins and minerals and anti-inflammatory remarkably helps in reducing the inflammation. This live foods are low in glycaemic index which decreases insulin resistance and helps in the management of PCOS by preventing the pathogenesis of it [73, 74].

The significant factor in the diet is low calorie diet with the low GI, which influences insulin sensitivity, reduces anthropometry and body fat remains remarkable in the management of PCOS.Gonzales et al reported that saturated fat ingestion increases circulating TNF-alpha and peripheral leukocytic suppressor of cytokine -3 expression. Hence should be eliminated from the diet. Also dietary fiber has effective metabolic benefits on the gut microbiome with the release of SCFAs [75].

**Arthritis**

Arthritis is known as an acute or chronic inflammation in the joint. It co-exist with wide variety of symptoms such as pain, swelling, stiffness, diminished range of motion and structural changes [76].

The risk factors of arthritis varies with the type of arthritis. The etiology of osteoarthritis includes the various factors like advancing age, female gender, joint trauma and increased body weight and genetic factors such as genes encoding types II, IV, V, and VI collagens [77].

Rheumatoid arthritis (RA) is a chronic, inflammatory, systemic autoimmune disease which affects to smaller joints and progresses to larger joints with varying severity among the patients. The associated factors which contributes to

the development of rheumatoid arthritis are age, gender, genetics and environmental exposure like cigarette smoking, air pollutants and occupational [78].

In gouty arthritis, prolonged hyperuricemia leads to uric acid deposition and inflammation in the joints. The disease mainly seen in patients who are under-excretors i.e. thry are not able to get rid of uric acid which formed as a result of purine metabolism. Along with this Male sex, old age, CKD, alcoholism. And certain drugs are contributing risk factors for hyperuricemia gout [79].

Dietary choices constitute both diseases risk and protective factors, depending on the nutritional properties of particular foods. Food habits like red meat, salt. Excessive caloric intake shows pro-inflammatory effects whereas fruits, vegetables etc. reduces inflammation in the joints [80].Naturopaths prescribes special diet like anti-inflammatory diet, elimination diet which includes fruits and vegetables which are low in calories, supports in reducing the weight and reduces the risk of chronic diseases. In one study, the eliminative diet has reduced the clinical signs and symptoms of rheumatoid arthritis [1, 81].

The anti-inflammatory diet is rich in antioxidants, polyphenols, carotenoids, omega 3 fatty acids, low in GI, provides beneficial role in the symptom relief in arthritis. A study observed that low-inflammatory diet intervention is associated with more weight loss, lower inflammation, improved physical function measures (in RA) and reduces joint pain [82].

Earlier studies haves shown that fasting with the intake of 500 kcal per day for about 7-10 days followed by plant based diet , reported positive effects like decreased morning stiffness, reduced pain and increased function in RA patients [83].

Fraser et al reported that fasting in the form vegetable juices decreased CD4+ lymphocyte activation and numbers. This in turn lowers the T cell activation, and transient immunosuppression suppresses the RA [84]. A juice fasting of 7-10 days with reduced energy intake for period of 1 year of vegan diet significantly reduces pain, swelling and tenderness in the joints, erythrocyte sedimentation rate (ESR) and C-reactive protein [85].

A diet rich in dietary fibres, moves to the gut and gets fermented by the micro flora and have inverse relationship with inflammatory markers like plasma fibrinogen, TNF-alpha, IL-r which are the indicators for the progression of the diseases [86].

## Conclusion:-

Healthy diet, a foundation in the naturopathy system of medicine, supports a person to live a better lifestyle. The food like seasonal fruits, fresh vegetables, green leafy vegetables, sprouts which taken in the natural form are the excellent sources. The food which is regarded as medicine in naturopathy, must be in a balanced form to seek optimum health. It works to prevent illness, improve overall health. Hence it is known as holistic diet which enhances healing capacity and acts as a natural healing method for various lifestyle diseases. Along with these fasting is a natural road to excellent health and overall wellness. It helps in the restoration of digestive health which has been disrupted with the lifestyle habits. It supports in the stimulation of vital protective mechanisms which helps in the prevention and management of diseases and encourages a healthier life.

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