

The Ayurvedic Perspective of Common Metabolic Disorders

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The sole purpose of this e-book is to provide information about the tradition of Ayurveda, and its concepts of metabolic disorders. This information is not intended for use in the diagnosis, treatment, cure or prevention of any disease.

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Metabolic Disorders

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- The body is very sensitive to the subtle changes in digestion and metabolism.
- The key factor for the metabolism is *agni*.
- Almost all the metabolic diseases are *agni* originated.
- Hence, metabolic disorders can be easily prevented by following the correct dietary and lifestyle habits.

Occurrence of Metabolic Disorders

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- Food must not only be digested and absorbed from the intestine and circulate in the blood plasma, but also to be absorbed by the tissues.
- There are seven primary supportive tissues (*dhatu*s) in the body:
 - Plasma
 - Blood
 - Muscular tissue
 - Adipose (fat) tissue
 - Osseous (bone) tissue
 - Marrow & myeloid tissue
 - Reproductive tissue

- All the tissues are made up of cells with different structures and the functions are connected within and with other cells through subtle intracellular, intercellular channels/ pores (*srotas*) to distribute nutrients and to excrete metabolic waste.
- All these complicated processes are facilitated and maintained by a variety of enzymes and hormones and other mediators which we call different types of *agni* inside the body.
- The excretory products (*mala*) also have to be properly produced and eliminated in order to complete the “perfect metabolism”.
- When there is a subtle change in any of these processes, and continues for some time without proper correction, then results in a “Metabolic Disease”.

Diabetes Mellitus (DM)

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- One of the most common health issues.
- Almost 3% of the world population suffers from DM.
- DM increases the risk of heart, cerebral and vascular disease.
- Occurrence of DM is mainly due to defective metabolism leading to derangement of body tissues (*dhatu*).
- Many of the causes and the complications are preventable.

Signs & Symptoms of DM

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- Honey like sweet smell in urine
 - Excessive urination
 - Excessive thirst
 - Excessive hunger
 - Lassitude
 - Tiredness without working
 - Fasting blood glucose level $126\text{mgdl} <$ or HbA1c $7\% <$
- **Complications**
 - Unhealing chronic wounds and ulcers
 - Blood vessels, kidney, eye, nerve damage
 - Numbness of the extremities

Causes of DM

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- Lethargic lifestyle – lack of exercise
- Excessive sleep
- Overeating sweet and fatty food
- Obesity
- Infections e.g. congenital rubella, cytomegalovirus and parasitic infections
- Some pharmaceuticals e.g. streptozotocin, alloxan, pentamidine

Management of DM

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- In allopathic medicine, there is a classification of DM, Type-1 DM associated with the absence of insulin-secreting capacity (< 10%) and Type-2 with some degree of insulin-secreting capacity (> 90%).
- Due to the failure of the pharmaceuticals, all the types of DM patients may need insulin treatment at one point
- But the Ayurvedic management is different from the allopathic perspective and more effective as Ayurveda focus on correcting the *agni*, the cause of the issue.
- Lifestyle and dietary changes are also necessary in correction of DM.

Dietary & Lifestyle Changes

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- Dietary and lifestyle interventions should be initiated according to the disturbed *doshas* and the constitution of the person.
- This includes:
 - Spiritual nurturing
 - Changing the stressful environment
 - Enough exercise
 - Dietary habit changes
- Stress cause free radical damage, which directly affects the cell damage. Hence, changing the emotional and psychological environment is very important.
- It can include relaxation exercises, listening to relaxing music, signing, painting, dancing, playing with animals, yoga and meditation, etc.
- Changing dietary habits, such as eating the right amount at a right time in a quiet environment is also important.
- The end product of carbohydrate metabolism is glucose. Hence, controlling the consuming amount of carbohydrates is important.

Best Food for DM

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- *Amla* (Indian gooseberry)
- Bitter gourd/ bitter melon
- Jicama
- Asparagus
- Artichokes
- Spinach
- Kale
- Burdock
- Nuts & seeds
- Turmeric
- Fenugreek
- Black pepper
- Ginger
- Chia seeds
- Flax seeds
- Raw honey

Thyroid Dysfunction

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- Thyroid problems are among the most common endocrine disorders presently seen world.
 - Hypothyroidism
 - Hyperthyroidism
- According to 1999 World Health Assembly report, 15. billion persons in more than 110 countries are threatened with thyroid disorders.
- Endocrine function is a part of *agni* function in the body, hence the changes due to thyroid issues cause impaired metabolism.

- Thyroid gland is one of the most important organs of the endocrine system, as it regulates almost all the body functions:
 - Metabolic
 - Respiratory
 - Cardiovascular
 - Digestive
 - Nervous
 - Reproductive
- Thyroid gland associates with *pitta dosha* but located on *kapha* location of the body (refer to page 12 on Kitchen Pharmacy E-book), and the abnormalities may also associate with *vata*. Hence, the *dosha* imbalances are mostly tridoshic.

Hypothyroidism

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- Low activity of thyroid gland and hence, inadequate production of the thyroid hormones.
- A typical low *agni* condition.
- The person shows the signs and symptoms of low metabolic status:
 - Fatigue
 - Sleepiness
 - Mood swings
 - Forgetfulness
 - Weight gain
 - Depression/irritability
 - Muscle cramping and aching
 - Weakness
 - Decreased perspiration
 - Changes in blood pressure
 - High cholesterol
 - Swelling in legs
 - Blurred vision
 - Cold intolerance
 - Hoarse voice
 - Heavy menses
 - Coarse, dry hair and skin
 - Hair loss (on head and/or body)
 - Constipation

Hypothyroidism in children and teens

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- In general, children and teens who develop hypothyroidism have the same signs and symptoms as adults do, but they may also experience:
 - Poor growth, resulting in short stature
 - Delayed development of permanent teeth
 - Delayed puberty
 - Poor mental development

Causes of Hypothyroidism

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- Low state of *Agni* (thyroid gland fails to produce enough hormones). *kapha dosha* has the property of heaviness. It also has the property of dullness. Hence hypothyroidism is a vitiated *kapha* condition with lowered *agni*. The treatment should also be focused on reducing the heavy, dull status of *kapha dosha*.
- Autoimmune disease - Hashimoto's thyroiditis can be considered as the most common cause of hypothyroidism. Autoimmune disorders occur when your immune system produces antibodies that attack your own tissues. This is another *amagenic* condition that the toxic antibodies affect the thyroid's ability to produce hormones.
- When the body doesn't have enough *agni* to digest *ama* or when there are external *amagenic* sources such as bacterial or viral toxins, other chemical or radiation exposures, most likely the autoimmune conditions occur.

Hypothyroidism Diet

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- Foods high in iodine kelp, asparagus, seafood, bananas, spinach and high selenium foods such as brazil nuts, oysters, tuna, sunflower seeds, antioxidants such as chia, flax, hemp seed sprouts, etc.
- Cruciferous vegetables such as cabbage, turnips, Brussels sprouts and cauliflower, dairy products, gluten and high sugar products can reduce thyroid activity and are contraindicated for patients experiencing low thyroid activity.

Hyperthyroidism

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- Characterized by the excessive production of thyroxin by the thyroid gland.
- Hyperthyroidism reflects profound derangement of *vata* and *pitta doshas*.
- The vitiated *doshas* over stimulate the gastric fire (*agni*) which leads to excessive hunger.
- *Vata* has dynamic, light and unstable properties. Escalation of dynamic and unstable characteristics causes tremors in the extremities, sleeplessness, nervousness and difficulty to concentrate the mind. It is also marked by frequent bowel movement and irregular menstruation. The increased lightness of *vata* also cause weight loss.
- *Pitta* is hot and the patient has excessive sweating and intolerance towards heat.

Signs & Symptoms of Hyperthyroidism

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- Sudden weight loss, even when your appetite and the amount and type of food you eat remain the same or even increase
- Rapid heartbeat (tachycardia) — commonly more than 100 beats a minute — irregular heartbeat (arrhythmia) or pounding of heart (palpitations)
- Increased appetite
- Nervousness, anxiety and irritability
- Tremor — usually a fine trembling in your hands and fingers
- Sweating
- Changes in menstrual patterns
- Increased sensitivity to heat
- Changes in bowel patterns, especially more frequent bowel movements
- An enlarged thyroid gland (goiter)
- Fatigue, muscle weakness
- Difficulty sleeping
- Skin thinning
- Fine, brittle hair

Causes of Hyperthyroidism

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- Autoimmune diseases such as Grave's disease when the antibodies produced by the immune system attacks thyroid gland.
- Hyper-functioning thyroid nodules.
- Inflammation in the thyroid gland.
- Deranged *vata* and *pitta* enters in to the channels (*srotas*) leads to imbalanced *agni* state and cause the symptoms.

Hyperthyroidism Diet

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- Some of the best foods for hyperthyroidism are the goitrogens. Goitrogens are foods that inhibit the uptake of iodine into the thyroid.
 - Broccoli
 - Kale
 - Radish
 - Turnip
 - Brussels sprout
 - Cabbage
 - Watercress
 - Kohlrabi
 - Mustard
 - Mustard Greens
 - Mint
 - Rosemary
 - Basil
- Artificial sweeteners, gluten, dairy products and food high in iodine should be avoided.

Obesity

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- Obesity has become a worldwide epidemic.
- A disorder of *meda dhatu* (adipose tissue), which includes fat metabolism.
- The key causes found in lifestyle and diet choices particularly disrupt *dosha* and *agni* balance.
- When the diet and lifestyle weakens the digestive fire, which in turns increases toxins, clogging the communication channels *srotas* and thereby disrupting the formation of tissues (*dhatu*). This collection of imbalances then interferes with the formation of tissues or *dhatu* and leads to a tissue imbalance that we experience as excess weight.
- Accumulation of *ama* in *srotas* (channels) causes imbalance in naturally-flowing *Vata* energy. Restricted or imbalanced *Vata* energy ends up in increasing *agni* – the digestive fire – leading to increase appetite and thirst. This leads in turn to increase *kapha dosha* and *meda dhatu* (fat tissue) and the whole cycle starts again.

Agni in Fat Metabolism

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- *Agni* is the cosmic fire – the principle of transformations of materials. It convert complex food to tiny absorbable particles and to build the body tissues (*dhatu*). The first and foremost level of *agni* is digestive fire (*jatharagni*). It is responsible for digesting the food in stomach and the small intestine.
- The digested food particles or the essence then circulates through the plasma and blood further providing substrates to the tissues.
- Each tissue has their own *agni* (metabolic fire) – *dhatwagni* to assimilate the digested substrates.
- The lipid precursors acted upon fat-specific metabolic fire (*medo-dhatwagni*) for its conversion into adipose tissue.
- The quality or the function of all specific *agni* depends on the quality and the function of digestive fire, which should be protected and maintained carefully. The impairment of the digestive fire and the specific tissue metabolic fire lead to poor availability of the constituents and depletion of tissues.

Causes of Obesity

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- Overeating
- Excessive intake of heavy or cold food and drinks
- Oversleeping
- Lack of exercise
- Frequent snacking
- Eating processed food and leftovers
- Eating while multi-tasking
- Eating food that is not suitable to one's body type.

Management of Obesity

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- 75% of Americans are chronically dehydrated. Warm water is a natural detoxifier. Warm water mops up impurities as it travels through over-taxed digestive system, sweeping away molecules left behind from partially digested food that could be slowing down what nature intended to be an enviably swift metabolic rate.
- Drinking a cup of hot water with a teaspoon honey and 10 drops of lemon juice whenever feel hungry will be a good substitute for eating and will help to melt the fat.
- A study in the British Medical Journal has discovered that people who eat quickly are three times more likely to be overweight than those who take their time.
- Avoid overeating and/or eating heavy foods in large quantities.
- Avoid tamasic foods: leftovers, processed, canned foods, fast food or food with additives and colorings.
- Avoid ice cold water and drinks and cold foods.
- Eat according to the body constitution.

Obesity Diet

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- Garlic
- Ginger
- Cinnamon
- Pepper, long pepper
- *Amla*
- Lemon
- Bitter gourd
- Asparagus
- Kale
- Spinach
- Pumpkin seeds, sunflower seeds, sesame seeds, chia seeds, flax seeds
- Cilantro, celery, parsley, rosemary, thyme, oregano

Hypercholesterolemia

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- Cholesterol is an important building block in the formation and repair of cell walls, function of nerve tissue, and the production of hormones such as testosterone, estrogen, and the stress hormone, cortisol.
- The fat tissue (cholesterol) in itself is not bad, and is essential for the body to function properly.
- About 20–25% of total daily cholesterol production occurs in the liver.
- When digestion, assimilation and elimination are balanced (balanced *Agni*), fat tissue and cholesterol will also be balanced.

Types of Cholesterol

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- There are several kinds, but the ones to focus on are low-density lipoprotein (LDL) and high-density lipoprotein (HDL). Low-density lipoprotein is the major cholesterol carrier in the blood. And about one-third to one-fourth of blood cholesterol is carried by HDL.
- If too much LDL cholesterol circulates in the blood, it can slowly build up in the walls of the arteries feeding the heart and brain. Together with other substances it can form plaque, a thick, hard deposit that can clog those arteries. This condition is known as atherosclerosis.
- HDL cholesterol is known as “good” cholesterol because a high HDL level seems to protect against heart attack. A low HDL cholesterol level also may raise stroke risk.

Management of High Cholesterol

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- Include foods that are rich sources of antioxidants in the diet. Eat citrus fruits, nuts such as walnuts and almonds, carrots, strawberries, apples, spinach and broccoli.
- Consuming garlic is a good option for people fighting high levels of LDL. Eat 2-5 cloves of toasted garlic for instance on a daily basis.
- Curry leaves and turmeric are also known to have properties that remove clogging from the arteries. Try cooking the food with curry leaves and add turmeric to food to reap their benefits.

Indigestion

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- Stomach is one of the vital organs (*marma*) in the body.
- The minute food enter into the stomach, the stomach wall starts churning and mixing the food with gastric juice.
- The food sap is then enters into the intestine and exposed into the pancreatic and intestinal juice, bile and the natural flora - *agni*.
- Once the food is digested to easily absorbable particles, the process of absorption and assimilation starts.
- The pathological status of *agni*, i.e. *Vishamagni* (irregular), *Theekshnagni* (voracious), *Mandagni* (low) causes the impaired digestion of food.

Classification of Indigestion

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- Endotoxic indigestion – mainly due to aggravation of *kapha* and *ama*. Abdominal heaviness, excess saliva, puffy face, belching out undigested food particles.
- Acid indigestion – mainly due to aggravated *pitta*. Giddiness, excess thirst, daze, acid reflux, excess sweating, burning sensation of the body.
- Static indigestion – mainly due to aggravation of *vata*. Abdominal pain, distension, bowel obstruction, flatulence, bewilderment, myalgia are the main symptoms.

Complications

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- If the indigestion is not timely corrected and continues for some time, it leads to other chronic conditions such as:
 - Rheumatoid arthritis
 - Liver diseases
 - Colon diseases
 - Peptic ulcers
 - Hemorrhoids
 - Skin diseases such as psoriasis, eczema
 - Chronic allergies, etc.

Management of Indigestion

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- Eating at regular times
- Enjoy eating, without rushing
- Avoid Nonsteroidal Anti-inflammatory Drugs (NSAIDs)
- Avoid smoking
- Include spices in diet – ginger, garlic, cumin, coriander, curry leaves, fennel, mustard, pepper, long pepper, etc.
- Take 2g of dried powder of ginger with warm water, twice/day
- Take 5g of fresh ginger with rock salt or jaggery, twice/day, before meals.
- 7-10 ml of lemon juice, after meals.

Rheumatoid Arthritis (RA)

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- The Sanskrit word for rheumatoid arthritis is *Amavata*. Just by looking at the name, it's clear that both *ama* and *vata* are involved in this disease.
- According to Ayurveda, pathogenesis of rheumatoid arthritis is considered to be due to the formation of *ama* due to poor digestive fire.
- *Ama*, physically resembles with *kapha*, and hence, tends to deposit in *kapha* locations such as joints.
- Mostly, people with rheumatoid arthritis, are *vata-pitta* constitution particularly because they tend to have incompatible diet, high level of erythrocyte sedimentation rate (ESR), and low hemoglobin levels.
- Although rheumatoid factors are found in 80% of the rheumatoid arthritis patients, these factors are not known to cause the disease.

Signs & Symptoms of RA

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- Inflammation of one or more joints, particularly hand, foot, thigh, sacrum, knees and metatarsophalangeal joints.
- Swelling, tenderness, reddish or bluish discoloration of joints.
- Low appetite, indigestion, constipation
- Low fever
- Malaise, fatigue
- Lethargy
- Feeling of heaviness in the body

Management of RA

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- The strategy to prevent accumulation *ama* is to avoid sedentary lifestyle.
- Eat easily digestible food that doesn't imbalance *agni*.
- Regular exercise and adequate rest.
- Brown/ wild rice cooked with lentils and spices is a light diet to improve the digestion.
- Sipping ginger tea couple of times a day is also going to help with relieving pain and digesting *ama*.
- Garlic, clove, nutmeg, cardamom, fennel, coriander spices are effective in management of *ama*.

Rasayana

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- The Sanskrit word *Rasayana* means *Rasa* (nutrition) + *Ayana* (transportation in the body)
- Thus, *Rasayana* refers to compound preparations containing multiple herbs and minerals that improve transportation of nutritional material to body tissues.
- They are a part of the overall balanced diet.
- *Rasayanas* improve immunity, vitality, prevent aging and rejuvenate the body.
- *Rasayanas* act in a variety of ways by:
 - Improving the nutritional value of the food
 - Bioavailability of nutrients
 - Metabolism of nutrients
 - Cleaning *srotas* (microcirculatory channels/ pores)
- *Rasayanas* are equivalent to antioxidants, alkaloids, glycosides, tanins, etc.

Kitchen Pharmacy for Metabolic Disorders

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- **Diabetes –**
- ½ teaspoon turmeric, ½ teaspoon fenugreek, ¼ teaspoon Ajwain, decoction 2-3 times/ day
- [Triphala](#) decoction 2-3 times/ day
- ½ teaspoon Musta, ½ teaspoon turmeric, ¼ teaspoon calamus, ½ teaspoon chia seeds infusion, 2-3 times/ day

- **Hypothyroidism –**
- ½ teaspoon Ashwagandha powder + ½ teaspoon dill powder, 3 times/day
- 2 cloves of Garlic, ½ " ginger, ½ teaspoon dill, ¼ teaspoon calamus, decoction, 2-3 times/day
- ½ teaspoon galangal powder, ½ teaspoon Ashwagandha powder, ½ teaspoon chia seeds, ½ teaspoon flax seeds, infusion, 2-3 times/day
- Kelp, 1 capsule, 3 times/day
- 2 tablespoons of organic apple cider vinegar to a glass of warm water, 2 times/day

- **Hyperthyroidism –**
- Lemon balm, 1.5 – 4.5 g, 3 times/day
- ½ teaspoon holy basil, ½ teaspoon Amla, ¼ teaspoon fenugreek, infusion, 3 times/day
- Moringa, aloe vera, chia juice
- Bugleweed tea

- **Obesity –**
- Pepper, long pepper, dried ginger (*Trikatu*) in equal amounts, ½ teaspoon, 3 times/day
- Peeled off garlic cloves preserved in raw honey, 1 clove per day.
- ginger, cinnamon, black pepper, cardamom, clove tea
- ¼ teaspoon black pepper, 3 teaspoon lime juice and 1 teaspoon honey in a cup of warm water, 2-3 times a day.
- ½ teaspoon turmeric, ½ teaspoon fenugreek, 2 cloves of garlic, 3-4 clove bud, infusion, 2-3 times/day

- **High Cholesterol –**
- ½ teaspoon holy basil, 2-4 chopped garlic cloves, 2” ginger, infusion, 2-3 times/day
- Fenugreek soaked overnight in a glass of water and drink the water in the morning
- 1 teaspoon of apple cider vinegar in a glass of water, 2 times/day
- Aloe vera juice, chia seeds, flax seeds juice

- **Indigestion –**
- 1 teaspoon lemon juice, ½ teaspoon ginger juice, ½ teaspoon honey, 2-3 times/day
- Digestive tea (given in the Dosha Diet handout)
- ½ teaspoon ground clove, ½ teaspoon chopped ginger, pinch of pepper, infusion, 2-3 times/day

- **Rheumatoid Arthritis –**
- 2" Ginger, ½ teaspoon galangal, 2-3 cloves of garlic, 3-4 clove buds, infusion, 2-3 times/day
- ½ teaspoon fenugreek, 3-4 cloves of garlic, ½ teaspoon Amla, ½ teaspoon Musta, ½ teaspoon coriander, decoction, 2-3 times/day
- 3" piece of Cat's claw, 2-3 cloves garlic, 2" ginger, decoction, 2-3 times/day
- ½ teaspoon mustard, ½ teaspoon cardamom, ½ teaspoon coriander, ½ teaspoon galangal, ½ teaspoon turmeric decoction, 2-3 times/day

Glossary

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- *Tamasic* food - *Tamasic* foods are those that have a sedative effect on the mind and body. In general, they are considered detrimental. They can also cause mental dullness and physical numbness.
- *Triphala* – Three fruits in Ayurveda: Haritaki, Amla and Bibhitaki.