

TO ASSESS THE EFFECT OF SUPPRESSION OF *KSHUDHA* (HUNGER): A CRITICAL REVIEW

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ABSTRACT

The human body is a wonderful complex system which has several ways to balance or eliminate the materials which could be harmful to the body, to maintain the healthy operation of all its systems, there is a specialized branch called Swasthavritta, which means science for maintenance of the whole health. The Health is the supreme foundation for the achievements of life. Therefore, *Ayurveda* aims to maintain the condition of health -swasthya raksana^[1]. Suppression of natural bodily urges does not allow body the opportunity to return to homeostasis and release toxins. Evacuation of natural urges in the proper time, place is essential for the maintenance of perfect health. There are two types of natural urges Adharaneeya vegas (non-suppressible urges) and Dharaneeya vegas^[2] (suppressible urges). The word vegadharanam consists of *Vega and dharan*. The term Vega means flow, stream, current, impulses energy. And the term of *Dharan* means "suppression"^[3]. There are thirteen type of natural urges in the body and *kshudha* is one of *Adhrniya vega*. *Acharyas* described various symptoms related to suppression of *Kshudha vega*. In modern science, hypothalamic nuclei are responsible for hunger and due to suppress of hunger reflexes disorders of nervous system causing many diseases.

KEYWORDS: Adharaneeya vega, vega vidharana, vegas, natural urges, Hunger, ksudha *vega dharn*, ksuta vegadharna.^[4]

INTRODUCTION

Vegadhran is suppression of natural urges. *Dharniya vegas* are suppressible urges and *adhrniya vegas* are non-suppressible urges. The root cause of many diseases lies in the excess of *dharniya vega*, such as *manasika vega*, meaning that they affect the mind. Mind and body influence each other.^[5] Today science has proven that mind is the root cause of all the serious diseases. Initiation of *vega* is essential to normal body activities through which unwanted body materials are excreted at regular intervals & controlled by nervous system. *Ayurveda* explains that there are different natural urges exerted by human body, and for well-being of the human body some urges are to be suppressed and the rest should never be suppressed. These are thirteen urges which should never be suppressed.

TABLE NO-1: *Adharaneeya vegas* (Non-suppressing urges).

According to <i>Samhita</i>	Number of <i>Adharniya Vega</i>
Charak Samhita	13 ^[6]
Sushruta Samhita	13 ^[7]
<i>Astanga Hridya</i>	14 (<i>Kasa and Udgara</i>) ^[8]
Bhavprakash	13 ^[9]
Bhel Samhita	12 ^[10]

TABLE NO: 2.

According to Samhita	Symptoms of Kshudha vega Dharan
Charak Samhita	<i>Krushata</i> (one subjects himself to emaciation) <i>Durbalta</i> (weakness) <i>Vaivarna</i> (discoloration) <i>Angamarda</i> (beating type of pain in different parts of the body) <i>Aruchi</i> (anorexia) <i>Bhrama</i> (giddiness)
Sushruta Samhita	<i>Tandra</i> (Stupor) <i>Angamarda</i> (bodypain) <i>Aruchi</i> (loss of taste) <i>Vibhram</i> (giddiness) <i>Karshya</i> (emaciation)
Astanga samhita	<i>Angbhanga</i> <i>Aruchi</i> (loss of appetite) <i>Glani</i> (exhaustion), <i>Karshya</i> (emaciation), <i>Shoola</i> (pain in the abdomen) <i>Bhrama</i> (giddiness).

“Vegan na dharayet vata vin mutra kshavathu truta kshudham | nidra Kasa shramashwas jrumbha ashru chardi retasam” ||^[11] (As.hr.su.5/2.)

*One should not suppress the natural urges relating to urine, faces, semen, flatus, vomiting, sneezing, eructation, yawning, hunger, thirst, tears, breathing.^[12]

*Urges of the flatus, Faces, urine, thirst, Hunger, sleep, cough, Heavy breathing on exertion, tears, vomiting and seminal discharge should not be suppressed.

By suppression of hunger *Angbhanga* (breaking and splitting type of pain all over the body), *Aruchi* (loss of appetite) *Glani* (exhaustion), *Karshya* (emaciation), *Shoola* (pain in the abdomen) and *Bhrama* (giddiness) are produced.

Chikitsa -*Laghu* (light), *snigdha* (unctuous food), *usna* (hot food)^[13]

*Suppressing of hunger leads to *Krushata* (one subjects himself to emaciation), *Durbalta*(weakness) *Vaivarna* (discoloration), *Angamarda* (beating type of pain in different parts of the body), *Aruchi* (anorexia) and *Bhrama* (giddiness)

In that case, one should take *Snigdha bhojana* (unctuous food having reasonable amounts of ghee and oil), *Ushna bhojana* (hot food) and light food.^[14]

*Disease produced by suppression of *Vata* (flatus) *Vit* (Faeces) *Muta* (Urine), *Jrumbha*(yawns) *Asru* (tears) *Ksavathu* (sneeze) *Udgara* (bleching), *Vami* (vomiting) and *Indriya* (semen) are known as *Udavarta*, it also *Nidra* (sleep).

Tandra(Stupor), *Angamarda*(bodypain), *Aruchi* (loss of taste) *Vibhram*(giddiness)*Karshya* (emaciation) In that case, one should take *Snigdha bhojana* (unctuous food), *Ushna bhojana* (hot food).^[15]

Deha Prakriti

Some persons maintain the equilibrium of *Vata*, *Pitta* and *Kapha* from the very time of conception; some are dominated by *Vata*, some by *Pitta*, some by *Kapha*. Those of the first category are not susceptible to disease and the rest of them always are always likely to suffer. The body constitution (*Deha Prakriti*) of persons is named per the predominance of *Doshas*.^[16]

Prakriti or physical constitution of the fetus is determined by the following factor-

1. Sperm and ova;
2. Season and condition of the uterus;
3. Food and regimens of mother; and
4. Nature of *Mahabhutas* comprising the fetus

The *Slesmala* prakriti individuals, have less perception for food, Presence of *Sitta* (cold), *Manda* (slow), *Sthira*(stable) *guna* of *kapha*, they leads lack of intensity of hunger. *Pittala prakriti* individuals, have more desire for food .and xcessive hunger due to *Ushana. tikashana guna* of *pitta Doshas*. *Vata prakriti* individual takes light and inconsistent amount of food due to light, mobile *guna* of *vata dosha*.^[17]

Hunger

Desire for food called hunger sensation of hunger. it is associated with a craving for food and several other physiological effects, such as rhythmical contraction of the stomach and restlessness, which cause the person to seek an adequate food supply. if the quest for food is successful, feeling of satiety occurs. these feeling is influence by environmental and cultural factors and specific centers of brain, especially the hypothalamus.

Regulation of Hunger and Food Intake

Food intake is regulated by two centers present in hypothalamus:

1. Feeding center
2. Satiety center

Feeding center: The lateral nuclei of the hypothalamus serve as a feeding center. stimulation of this area causes an animal to eat voraciously (hyperphagia) conversely, destruction of this area causes lack of desire for food and progressive inanition.

Satiety center: The ventromedial nuclei of the hypothalamus serve as the satiety center this center is believed to give a sense of nutritional that inhibits the feeding center. Electrical stimulation of this region can cause complete satiety and even in the presence of highly appetizing food the animals refuses to eat (aphasia). Destruction of the ventromedial nuclei causes voracious and continued eating until the animals becomes extremely obese. The paraventricular, dorsomedial and arcuate nuclei of the hypothalamus also play a major role in regulating food intake. Lesion of the paraventricular nuclei often cause excessive eating, whereas lesion of the dorsomedial nuclei usually depresses eating behavior. the arcuate nuclei are the sites in the hypothalamus where multiple hormones released from the gastrointestinal tract and adipose tissue converge to regulate food intake. There is much chemical cross-talk among the neurons on the hypothalamus, and together, these centers coordinate the processes that control eating behavior and the perception of satiety. These nuclei of the hypothalamus also influence the secretion of several hormones that are important in regulating energy balance and metabolism, including those from the thyroid and adrenal glands, as well as the pancreatic islet cells.

The hypothalamus receives neural signals from the gastrointestinal tract that provide sensory information about stomach feeding. chemicals signals from nutrients in the blood (glucose, amino acid, fatty acid) that signify satiety signals from gastrointestinal hormones, signals from hormones released by adipose tissue and signals from cerebral cortex (slight, smell, taste) that influence feeding behavior. The hypothalamic feeding and satiety centers have a high density of receptors for neurotransmitters and hormones that influence feeding behavior A few of many substances to alter Appetite.

1. orexigenic substances that stimulating feeding.
2. anorexigenic substances that inhibit feeding.

Machanism of Regulation of Food Intake

Under normal physiological conditions, appetite and food intake are well balanced and continuous in a cyclic manner. Feeding center and satiety center of hypothalamus are responsible for the regulation of appetite and food intake. these centers regulated by the following mechanisms.

1. Glucostatic mechanism.
2. Lipostatic mechanism.

3. Peptide mechanism.
4. Hormonal mechanism.
5. Thermostatic mechanism.

Glucostatic Mechanism: Cells of satiety center function as glucostats or glucose receptors, which are stimulated by increased blood glucose level. While taking food, blood glucose level increases. Slowly the glucostats are stimulated and satiety center is activated. At one stage, it develops the feeling of 'fullness'. Now, the satiety center inhibits the feeding center and stops the food intake. The feeding center is no longer inhibited. After taking food, once again blood glucose level increases and the cycle is repeated.

Lipostatic Mechanism: Leptin is a peptide secreted by adipocytes (cells of adipose tissue). It plays an important role in controlling the food intake and adipose tissue volume. While circulating through brain, leptin crosses the blood-brain barrier and enters hypothalamus.

In hypothalamus, leptin inhibits the feeding center, resulting in loss of appetite and stoppage of food intake. Mode of action of leptin Leptin acts through some specific neuropeptides in hypothalamus, such as:

a. Neuropeptide Y: It is secreted in small intestine, medulla and hypothalamus. Normally, this peptide stimulates the food intake. But, leptin inhibits neuropeptide Y, leading to stoppage of food intake.

b. Pro-opiomelanocortin (POMC): It is secreted from anterior pituitary. It is also secreted from hypothalamus, lungs, GI tract and placenta. Normally, it inhibits food intake. Leptin stimulates the secretion of POMC.

Peptide Mechanism: Ghrelin is secreted in stomach during fasting. It directly stimulates the feeding center and increases the appetite and food intake.

Hormonal Mechanism Some endocrine hormones and GI hormones inhibit the food intake by acting through hypothalamus. Hormones which inhibit the food intake:

- a. Somatostatin
- b. Oxytocin
- c. Glucagon
- d. Pancreatic polypeptide
- e. Cholecystokinin.

Thermostatic Mechanism

The preoptic thermoreceptors may act via feeding center. The cytokines are also play a role in decreasing the appetite during fever.^[18]

Neurons and Neurotransmitters in the hypothalamus that stimulate or inhibit feeding- There are two type of neuron in the arcuate nuclei of hypothalamus that are especially important as controllers of both appetite and energy.

(1) Pre-opiomelanocortin (P.O.M.C.) neurons that produces alpha melanocyte stimulating hormone (alpha M.S.H.)

Together with cocaine and amphetamine related transcript (CART) Activation of the POMC neuron decrease food intake and increase energy expenditure, whereas activation of the NPY-AGPR neurons increase food intake and reduce energy expenditure and release alpha-MSH, which then acts on melanocortin receptors found especially in neurons of the paraventricular nuclei. Although there are at least five subtypes of melanocortin receptor (MCR), MCR-3 and MCR-4 are especially important in regulating food intake and energy balance. Conversely, inhibition of MCR-3 and MCR-4 greatly increases food intake and decreases energy expenditure. The effect of MCR activation by activation of neuronal pathways that from the paraventricular nuclei to the nucleus tractus solitaries and stimulate sympathetic nervous system activity.

(2) Neuron that produces the orexigenic substances neuropeptide Y(NPY)and agouti -related protein (AGRP).

AGRP released from the orexigenic neurons of the hypothalamus is a natural antagonist of MCR-3 and

MCR-4 and probably increases feeding by inhibiting the effects of α -MSH to stimulate melanocortin receptors, due to gene mutations, is associated with excessive feeding and obesity. NPY is also released from orexigenic neurons of the arcuate nuclei. When energy stores of the body are low, orexigenic neurons are activated to release NPY, which stimulates appetite. At the same time, firing of the POMC neurons is reduced, thereby decreasing the activity of the melanocortin pathway and further stimulating appetite.

These neurons appear to be the major targets for the actions of several hormones that regulate appetite, including leptin, insulin, cholecystokinin (CCK), and ghrelin. In fact, the neurons of the arcuate nuclei appear to be a site of convergence of many of the nervous and peripheral signals that regulate energy stores.

The actual mechanism of feeding is controlled by centers in the brain stem. The function of other centers in feeding, then, it so controls the quantity and to excite these centers of feeding mechanism to activity.

Neurotransmitters and Hormones That Influence Feeding and Satiety Centers in the Hypothalamus

Table No.-3.

Decrease Feeding (Anorexigenic)	Increase Feeding (Orexigenic)
alpha-Melanocyte-stimulating hormone (MSH)	Neuropeptide Y (NPY)
Leptin	Agouti-related protein (AGR)
Serotonin	Melanin-concentrating hormone (MCH)
Norepinephrine	Orexins A and B
Corticotropin-releasing hormone	Endorphins
Insulin	Galanin (GAL)
Cholecystokinin (CCK)	Amino acids (glutamate and g-aminobutyric acid)
Cocaine- and amphetamine-regulated transcript (CART)	Cortisol
Peptide YY (PYY)	Ghrelin

Short Term Regulation of Hunger and Food Intake

When a person is driven by hunger to eat voraciously and rapidly, there has not been enough time for changes in the body's energy stores to occur, and it takes hours for enough nutritional factors to be absorbed into the blood to cause the necessary inhibition of eating. The following are several types of rapid feedback signals that are important for these purposes.

Gastrointestinal Filling Inhibits Feeding. When the gastrointestinal tract becomes distended, especially the stomach and the duodenum, stretch inhibitory signals are transmitted mainly by way of the vagus to suppress the feeding center, thereby reducing the desire for food.

GI Hormonal Factors Suppress Feeding. **CCK** may decrease feeding mainly by activation of the melanocortin pathway in the hypothalamus. **Peptide YY (PYY)** is secreted from the entire gastrointestinal tract, but especially from the ileum and colon. Food intake stimulates release of PYY, decrease food intake.

glucagon-like peptide, which in turn enhances glucose-dependent insulin production and secretion from the pancreas, tend to suppress appetite. Thus, eating a meal stimulates the release of several gastrointestinal hormones that may induce satiety and reduce further intake of food.

Ghrelin: Ghrelin is a hormone released mainly by the oxyntic cells of the stomach. Increases Feeding. Blood levels of ghrelin rise during fasting, peak just before eating, and then fall rapidly after a meal, suggesting a possible role in stimulating feeding.

Effect of Blood Concentrations of Glucose, Amino Acids, and Lipids on Hunger and Feeding

Decrease in blood glucose concentration causes hunger, which has led to the so-called glucostatic theory of hunger and feeding regulation. (1) A rise in blood glucose level increases the rate of firing of glucoreceptor neurons in the satiety center in the ventromedial and paraventricular nuclei of the hypothalamus. (2) The same

increase in blood glucose level simultaneously decreases the firing of glucosensitive neurons in the hunger center of the lateral hypothalamus

Temperature Regulation and Food Intake

When an animal is exposed to cold, it tends to increase feeding; when it is exposed to heat, it tends to decrease its caloric intake. This is caused by interaction within the hypothalamus between the temperature-regulating system and the food intake-regulating, because increased food intake in a cold animal (1) increases its metabolic rate and (2) provides increased fat for insulation, both of which tend to correct the cold state.

Feedback Signals from Adipose Tissue Regulate Food Intake

Leptin, a peptide hormone released from adipocytes, stimulation of leptin receptors in these hypothalamic nuclei initiates multiple actions that decrease fat storage, including (1) decreased production in the hypothalamus of appetite stimulators, such as NPY and AGRP; (2) activation of POMC neurons, causing release of α -MSH and activation of melanocortin receptors; (3) increased corticotropin-releasing hormone, that decrease food intake; (4) increased sympathetic nerve activity and (5) decreased insulin secretion by the pancreatic beta cells, which decreases energy storage.

Importance of Having Both Long- and Short Term Regulatory Systems for Feeding The

long-term regulatory system for feeding, which includes all the nutritional energy feedback mechanisms. The short-term regulatory stimuli for feeding, the person eat smaller quantities at each eating session and to prevent the metabolic storage systems and absorption of food.^[19]

Difference between hunger and appetite

Hunger is the need for food.

- A physical reaction that includes chemical changes in your body related to a naturally low level of glucose in your blood several hours after eating.
- An instinctive, protective mechanism that makes sure that your body gets the fuel it requires to function reasonably well.

Appetite is the desire for food

- A sensory or psychological reaction (looks good! smells good!) that stimulates an involuntary physiological response (salivation, stomach contractions).
- A conditioned response to food.

Effect of Thyroid hormone

Increased Gastrointestinal Motility, to increase appetite and food intake, thyroid hormone increases both the rates of secretion of the digestive juices and the motility of the gastrointestinal tract.

Local regulation of thyroid hormones in the CNS may physiologically regulate appetite.^[20]

Chronic pain can be suppressed by feelings of hunger. Finally, a specific molecule called NPY is the neurotransmitter that can modulate these inflammatory pain sensations. When NPY is blocked, hunger dissipates, and feelings of pain increase.^[21]

Ways to Reduce Hunger and Appetite

In the present era, mostly obese person who reduce the weight, so don't suppress the hunger but properly reduce the hunger and appetite.

Eat Enough Protein

high fiber intake

Drink Coffee: coffee increases the release of peptide YY (PYY). This hormone is produced in the gut in response to eating and promotes a feeling of fullness.

Eat Mindfully: eating quickly or while you're distracted can make it more difficult for your brain to recognize these signals.

Eat Some Ginger

Spice Up Your Meals

Exercise

Lose Body Fat Around Your Middle

Neuropeptide Y (NPY) is a hormone that influences appetite and energy balance. losing weight around your middle may help reduce your appetite and hunger levels

Enough Sleep

Honey

CONCLUSION

According to Samhita, for living a normal healthy life, it is necessary that the needs of these natural urges are satisfied instantaneously, as soon as they are explicit. *Vata prakriti* individual intake light food and less perception of hunger so they can suppress *Kshudha vega* for a long time and prone or suffer to more neurological diseases. Hunger is the physiological body reflexes to desire of the food for body nourishment and growth. If this phenomenon is altered, then it leads to various neurological disease like inflammatory pain. so, do not suppress the natural urge of *Kshudha*(hunger). The really interesting thing to mind is that chronic pain can be suppressed by feelings of hunger, hunger can override our feelings of chronic pain.

DISCUSSION

Vega Dharana itself a unique concept of *Ayurveda* explained in *Roganuttpadaneeya Adhyaya*. *Kshudha* is a one type of natural urge, there are no such evidences related to the *Vegadharana* and long term suppression, but an attempt to understand the basic physiology of body reflexes of own yukti. There are such symptoms mentioned in *Samhitas* and modern physiology which can be prevent any neuronal complication.

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