

## Ancient and Contemporary Terms for Inflammation

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### ABSTRACT

Inflammation is a complicated biological reaction involving immune cells, blood vessels, and chemical mediators that occurs in response to damaging stimuli [pathogens, injured cells, or irritants]. Inflammation helps mend injured tissues by getting rid of dead cells and other debris left behind from the initial insult and the inflammation itself. Shotha, Shopha, Svayatu, Utsedha, and Samhata are all terms for inflammation in Ayurveda. The intention of this review is to provide readers with some foundational understanding of inflammation in Ayurveda that may be used for therapeutic and preventative measures. The following literature evaluation draws on sources mentioned in foundational Ayurvedic writings as well as contemporary publications that are both relevant and helpful. Consistent inflammation over time is a hallmark of every degenerative condition. Ayurveda correctly identifies inflammation and the resulting oedema as a pathogenic symptom. Inflammation is seen as a normal part of the body's healing process for wounds in contemporary medicine. The three ways that inflammation is seen in Ayurveda—as a symptom, a sickness, and a consequence of other diseases—are all distinct. Inflammation is a prevalent pathogenic characteristic among degenerative disorders. Sroto Dushti (channel obstruction) by Aama (toxic waste of metabolism) causes inflammation-related abnormalities in micro channel circulation. Many chronic degenerative diseases may be avoided if Aama production is curbed. The research indicates that an appreciation of the idea of inflammation is essential for the prevention and treatment of a wide range of medical and surgical problems, particularly those that are chronic and degenerative.

**Keywords:** *Shotha, Sroto Dushti, Inflammation, Chronic Degenerative Diseases, Ayurveda, and Aama*

### Introduction

Vranashotha, or inflammation, is described at length in both the BrihatTrayeeas and the Laghutrayee, the three main and minor Ayurvedic treatises. Shotha, Shopha, Svayathu, Utsedha, and Samhata are all names for it that are used in various circumstances. It causes swelling, weight gain, and discomfort. Disease, symptom, and consequence all have been treated approaches to inflammation. Among the five indications of inflammation recognized by current science are function laesa (loss of function), rubor (redness), calor (increased heat), tumour (swelling), and dolour (pain). Inflammation is a complex network of molecular and cellular interactions geared toward homeostasis, and it is now widely accepted as a healing response of the body to cell harm caused to trauma or infection. Without proper care, inflammation may persist and cause permanent harm to the tissues around it. [1]

Inflammation is an immune cell, blood vessel, and molecular mediator-driven element of the body's complicated biological defensive reaction to infections, injured cells, or irritants. Inflammation serves primarily to initiate tissue repair; repair may begin if the underlying source of cell injury has been removed, necrotic cells have been removed, and inflammation has subsided. As opposed to adaptive immunity, which is tailored to each individual pathogen, innate immunity relies on a more general reaction known as inflammation. [2] The inflammatory response may be detrimental to an organism's existence if it allows the toxic stimuli (such as bacteria) to gradually destroy tissues. Chronic inflammation, on the other hand, has been linked to conditions including asthma, allergies, cardiovascular disease, and even cancer. Therefore, the body generally tightly controls inflammation. The inflammatory response

involves the local vascular system, the immune system, and numerous cells inside the wounded tissue, and it spreads and evolves via a sequence of biochemical reactions. When inflammation persists over an extended period of time (known as chronic inflammation), the types of cells present at the site of inflammation, such as mononuclear cells, gradually change. [3]

Because of its importance, the current research aims to compare and contrast the Ayurvedic and Western perspectives on inflammation.

### Materials & Methods

The present literary review of basic consideration of inflammation has been done incorporating important Ayurveda texts/Samhita like Charaka, Sushruta and Ashtanga Samgraha for the different aspects associated with inflammation and a possible correlation was attempted with the subject of inflammation by referring Robins and Cotran's Pathological basis of Diseases. [4] *Shotha* or any other symptoms mentioned frequently with degenerative disorders were also noted.

### Observations

Chronic inflammation is a cardinal sign of chronic degenerative disorders. A low grade chronic inflammation is also the symptom of most ageing and degenerative diseases. Most of the age related diseases such as Arthritis, Diabetes, Osteoporosis, Atherosclerosis, Parkinson's disease and Alzheimer's disease are underlined by chronic inflammation. Unfortunately, chronic inflammation precedes most cancers. Rudolf Virchow, the German physician in the 19<sup>th</sup> century suggested a link between inflammation and cancer, cardiovascular diseases, diabetes and other chronic diseases. Recently, observations have been confirmed and a molecular basis of most chronic diseases and the associated inflammation has been identified as suggested by Virchow. [5]

According to Ayurveda, inflammation can be considered as a vascular and cellular reaction. Any disturbances or vitiation in the channels of microcirculation (*Srotodushti*) leads to

- (a) Excessive functioning
- (b) Obstruction or inadequate activity
- (c) Tumour or new growths and
- (d) Movements in unnatural directions. [6]

The first inflammatory response is usually increased activity (vascularity) in the form of excessive exudates and protein release into the extracellular matrix. Then there is obstruction leading to change in the rate of diffusion of nutrients, oxygen and wastes. The hampered diffusion leads to oedema, tumours. Movement in unusual direction may be due to reverse osmosis as a result of electrolyte differences. All the clogging of the micro-channel has been attributed to *Aama* which is the toxic by-product of improper digestion. *Aama* is considered as the pre and post inflammatory waste and the chief contributor to *Srotodushti* (vitiating of body constitution). [7] It is interesting to note that there have been suggestions to quantify and qualify *Aama* according to its description in Ayurveda.

That the *Aama* status of a person in a very personalised form of treatment could actually be regarded as a bio- marker for chronic inflammation leading to metabolic syndrome and cancer will perhaps pave the way for preventive oncology and prevention of life style disorders. [8] According to Ayurveda, *Granthi-Arbuda* or tumour formation is considered as a form of inflammation. [9] The exact knowledge of inflammation can be significantly used in surgical practice.

### Discussion

Inflammation can be acute and chronic. It is body's response to trauma or infection. In fact, it is one of the mechanisms of healing process in which microbiological interactions are directed to facilitate a return to physiological homeostasis and tissue repair. The response is composed of both local events and a systemic activation mediated by Kinin and Cytokines. If tissues health is not restored inflammation becomes chronic and continually damages host tissue. [10] Chronicity always leads many complications like non healing wound, excessive fibrosis, callosity, tumours etc.

Ayurveda considers inflammation either as a cause, symptom or complication of many degenerative conditions. Inflammation is a reply, response or answer given by our body to trauma, injury, infection or ischemia. Inflammation can be acute, subacute and chronic. Also it could be severe or mild/low grade. The phenomenon is concerned with almost every disease. So it becomes mandatory to understand basic understanding of inflammation. The description of inflammation in the Samhitas gives better idea about the subject.

In most of the Ayurveda texts, inflammation is

mentioned as a pathological condition. Also inflammation has been described as an independent disease. The disease *Shotha* includes both oedema and oedematous inflammation. In *Samhitas*, there are separate chapters covering *Shotha/Shopha* as a disease.

[11]

In Charaka Samhita, *Shotha* is classified as

1. *Ekanga* (localised)
2. *Ardhanga* (regional)
3. *Sarvanga* (general)

*Shotha* also has been mentioned as an independent disease in Charaka Samhita. Inflammation associated with oedema has been treated as an independent disease. *Shotha* as a disease indicates oedematous condition with general symptoms of heaviness, instability, an elevation of heat, thinning of veins and discolouration. [12] Symptoms akin to increased vascularity like increase in temperature and increased venous pressure have been considered as the prodromal symptoms of *Shotha*. [13] The classification of *Shotha* is based on aetiology of two types.

- (1) *Nija* (endogenous-intrinsic factors) and
- (2) *Agantuja* (exogenous-extrinsic factors)

The description of *Shotha* is quite complete and proves the extent and depth of knowledge of this pathological condition in India since ancient time.

As *Acharya* Sushruta considered *Rakta* (blood) as a fourth *Dosha* (humour) and being from *Dhanwantari Sampradaya* (surgical discipline), he has classified *Shotha* slightly differently and has mentioned *Raktaja Shopha* (inflammation due to disorders in blood) and *Vranashotha* i.e. inflammation in wounds. [14] *Shotha* is also described as a complication of diseases-Charaka described seven inflammatory swelling that arises as complications of uncontrolled diabetes where as Sushruta and Vagbhatta listed these as ten. [15] Charaka also mentioned inflammatory swellings occurring in the absence of Diabetes, but with obesity as a triggering factor. [16]

Inflammatory swellings such as *Sharavika*, *Kacchapika*, *Jalini*, have been explained as

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difficult to treat in obese persons. [17] Prognosis of inflammation has been linked to obesity. This establishes the awareness of the relationship between inflammation and metabolic disorders. All the *Acharya* of Ayurveda have considered *Vidradhi* or abscess as one of the 10 inflammatory swellings. [18] This could occur externally and also internally (in vital organs). [19] Inflammation has been understood as a symptom of an abscess. [20] Neoplasia (*Granthi*) has been considered as a form of hard elevation occurring due to non-resolving of oedematous inflammation which is a result of chronic inflammation.

All degenerative disorders like Diabetes, Atherosclerosis, Parkinson's syndrome, Alzheimer disease, osteoarthritis and rheumatoid arthritis involves a common pathological feature of inflammation [21] and a low grade chronic inflammation is seen in obesity, ageing and various metabolic syndrome. Inflammation also precedes most cancers and is considered a hall mark of the neoplastic process. [22] There is a common consideration of inflammation according to Ayurveda and modern science in regards to the disturbance in flow of body fluid through various systems and their pathways. By toxic waste materials of metabolism

(*Aama*), there is obstruction of micro channels which is responsible for loss of homeostasis, inflammation and tissue damage. [23] Ayurveda strongly believes in *Aama* is the root cause of metabolic and degenerative disease since it blocks *Srotas* or micro channels that nourish tissues. *Aama* is believed to have antigenic and pro-inflammatory properties. [24] Hence *Panchakarma* i.e. detoxification or purification procedures can be practised for clearing clogged channels which are both gross and subtle.

## Conclusion

After detailed study of *Shotha*, it can be correlated it with inflammation. The condition is well described in Ayurveda as well as modern medical science in similar manner with language and technical difference. The basic knowledge of *Shotha* is definitively fruitful to understand disease process and to prevent as well as to treat the inflammatory conditions.

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