

## INFLAMMATION IN AYURVEDA AND MODERN MEDICINE

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### ABSTRACT

Inflammation in *Ayurveda* is known by different names in different contexts namely *Shotha*, *Shopha*, *Svayatu*, *Utsedha* and *Samhata*. Chronic inflammation is a cardinal sign of chronic degenerative disorders. Inflammation and oedema associated with it is duly recognised in *Ayurveda* as a pathological manifestation. While modern medicine considers inflammation as a symptom or rather as a healing response of the body in wounds. *Ayurveda* treats the concept of inflammation as (a) symptom of a disease (b) an independent disease and (c) a complication of diseases. Degenerative diseases share a common pathological feature of inflammation. The disturbances in micro channel circulation in inflammation are due to *Sroto dushti* (clogging of channels) by *Aama* (toxic waste of metabolism). Preventing *Aama* formation could hold the key to preventing chronic degenerative disorders. The paper deals with the concept of understanding inflammation in *Ayurveda* and Modern medicine.

**Keywords:** *Aama*, degenerative diseases, inflammation, *Shopha*, *Srotodushti*

### INTRODUCTION

Indian traditional system of medicine, *Ayurveda* encompasses all aspects of living-health and sickness. Like other pathological conditions inflammation has been documented in the *Brihat Trayee*, the *Charaka Samhita*, the *Susruta Samhita* and *Astanga Samgraha* between 1500 BC and 600 AD<sup>1</sup>. *Madhava Nidana*, in around 700 AD<sup>2</sup>, a complete book on pathogenesis in *Ayurveda* is influenced by all the three books in its description of inflammation.

Inflammation and the oedema associated with it have got the attention due to it in *Ayurveda* as a pathological manifestation. It is known by different names in different contexts namely *Shotha*<sup>3</sup> and *Shopha*<sup>4</sup>. *Svayathu*, *Utsedha* and *Samhata* are the other terms used in *Ayurveda*. It is characterised by elevation, oedema, heaviness and pain. Inflammation has been dealt with as a disease, as a

symptom and also as a complication of diseases.

From the time Celsus (30BC-38 AD) characterized inflammation by its four cardinal signs rubor (redness) calor (increased heat), tumor (swelling) and dolor (pain) and the fifth sign function laesa (loss of function) was added by Virchow in the 19th Century modern science has come a long way<sup>5</sup>. Today inflammation has been recognised as a healing response of the body in the acute stage. In response to cell injury due to trauma or infection, a complex network of molecular and cellular interactions is directed as a means to return to homeostasis mediated by cytokines<sup>6</sup>. If tissue health is not restored, inflammation becomes a chronic condition that damages the surrounding tissue<sup>7</sup>.

This paper seeks to present the *Ayurvedic* perspective on chronic inflammation in the light of path breaking

research on this aspect in modern science and exploring the relationship between inflammation and degenerative disorders as described in *Ayurveda* literature.

## **METHOD**

The research is purely a literary one. Major *Ayurveda* texts, *Charaka*, *Susruta* and *Ashtanga Samgraha* were referred to for the different names associated with inflammation and a possible correlation was attempted with the subject of inflammation in Robins and Cotran's Pathologic basis of Diseases. *Shotha* or any other symptoms mentioned frequently with degenerative disorders were noted.

## **The backdrop**

Chronic inflammation is a cardinal sign of chronic degenerative disorders<sup>8</sup>. A low grade chronic inflammation is also the symptom of most aging diseases<sup>9</sup>. Aging and degenerative disorders go hand in hand. It is alarming that an increasing number of young people are being diagnosed with disorders that were hitherto considered the bane of the elderly. Most of the age related diseases such as Arthritis, Diabetes, Osteoporosis, Atherosclerosis, Parkinson's disease and Alzheimer's disease are underlined by chronic inflammation. This has been suggested by increased serum levels of inflammatory mediators like cytokine levels in the subjects<sup>10</sup>. Studies have also proved that aging is accompanied by a 2-4 fold increase in the levels of cytokines<sup>11</sup>.

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<sup>12</sup>. Indeed, in recent years his observations have been confirmed and a molecular basis

of most chronic diseases and the associated inflammation has been identified<sup>13</sup>.

## **Ayurveda and inflammation**

A revisit to *Ayurveda* classics points to the understanding of inflammation as a vascular and cellular reaction. Vitiating in the channels of microcirculation or *Srotodushti* as it is envisaged in *Ayurveda* leads to (a) Excessive functioning (b) Obstruction or inadequate activity (c) Tumour or new growths (d) Movements in unnatural directions.<sup>14</sup>

The first inflammatory response is usually increased activity (due to vascularity) in the form of excessive exudates and protein release into the extra cellular matrix. Then there is obstruction leading to change in the rate of diffusion of nutrients, oxygen and wastes. The hampered diffusion leads to tumours, benign or malignant. Movement in unusual direction may be due to reverse osmosis as a result of electrolyte differences. All the clogging of the micro channels has been attributed to *Aama*, the toxic by-product of improper digestion. *Aama* is considered the pro inflammatory waste and the chief contributor to *Srotodushti*<sup>15</sup>.

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 personalized 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 lifestyle disorders<sup>16</sup>. Here, it is also to be noted that *Granthi* or tumour formation is considered as a form of inflammation in *Ayurveda*<sup>17</sup>.

### The inflammatory response

Modern medicine classifies inflammation as (a) acute and (b) chronic (exceeding 3 weeks).<sup>18</sup> Inflammation is the body's response to trauma or infection and is in fact a healing process. The molecular and cellular interactions are directed to facilitate a return to physiologic homeostasis and tissue repair. The response is composed of both local events and a systemic activation mediated by Cytokines. If tissues health is not restored

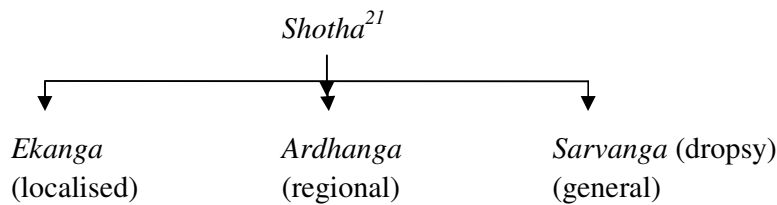
inflammation becomes chronic and continually damages host tissue<sup>19</sup>.

### Ayurvedic perspective

*Ayurveda* has considered inflammation as a pathologic condition that needs to be treated with anti inflammatory medication and addressing the underlying aetiology.

**Inflammation as an independent disease:** The classics have given extensive coverage to *Shotha* as a disease by dedicating entire chapters to the subject<sup>20</sup>. The disease *Shotha* includes both Oedema and oedematous inflammation.

### Classification as in Charaka Samhita

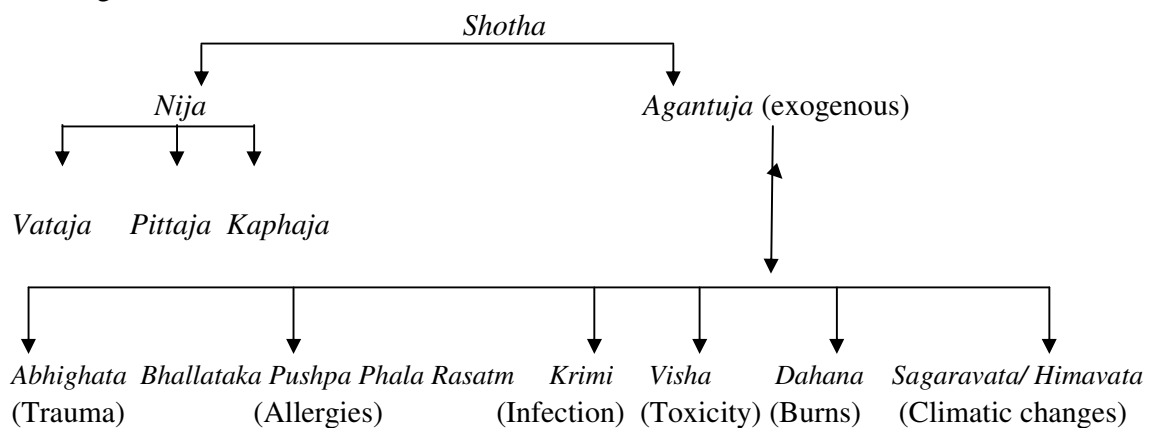


### Shotha as an independent disease in Charaka Samhita

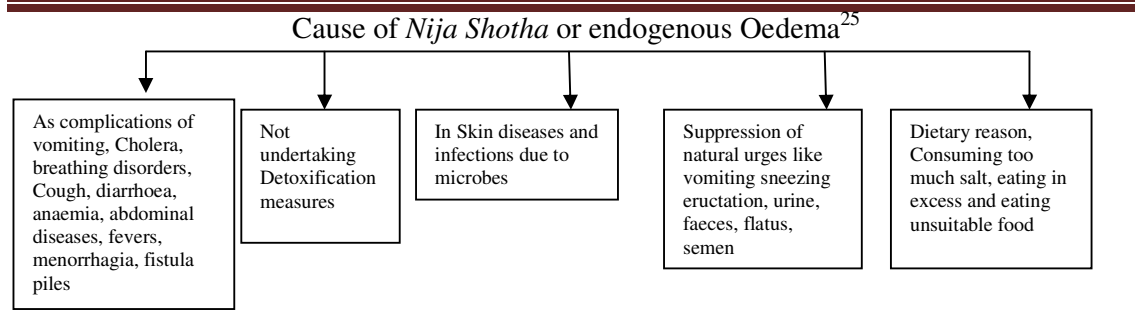
Inflammation associated with oedema has been treated as an independent disease in the *Samhitas Charaka, Susruta* and *Astanga Sangraha*. *Shotha* as a disease indicates oedematous condition with general symptoms of heaviness, instability, an elevation of heat, thinning of veins, discolouration<sup>22</sup>.

Symptoms akin to increased vascularity like increase in temperature and increased venous pressure have been considered as the prodromal symptoms of *Shotha*<sup>23</sup>.

The classification of *shotha* is based on aetiology and has been dealt with as basically being of two types. (1) Due to intrinsic factors called as *Nija* and (2) exogenous called as *Agantuja*<sup>24</sup>

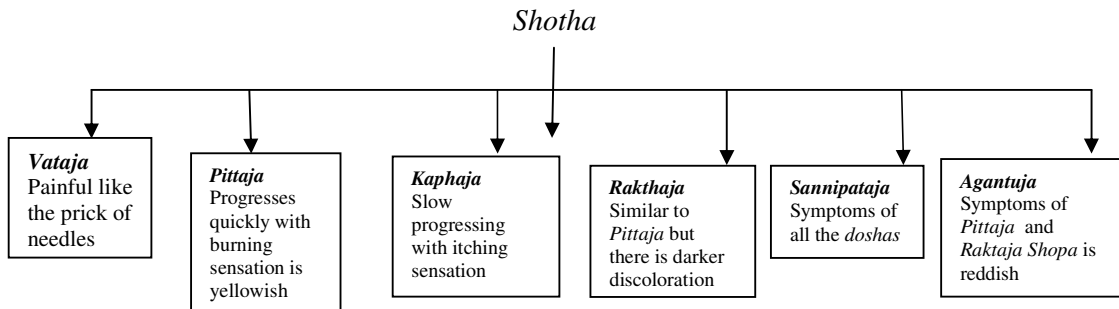


The aetiology for exogenous inflammation is quite complete and proves the extent of knowledge of this pathological condition in India since at least three thousand years.



### Sushruta samhita

Classification of *Shotha* in *Sushruta* varies slightly as he considered *Raktaja Shophā* (inflammation due to disorders in blood) and spoke of *Vranashotha* i.e. inflammation in wounds. This classification is justified from a surgeon's point of view<sup>26</sup>.



### Shotha as a complication of diseases

Charaka described 7 inflammatory swelling that arises as complications of uncontrolled diabetes *Susruta* and *Vagbhata* listed these as ten<sup>27</sup>. Charaka also spoke of inflammatory swellings occurring in the absence of Diabetes, but with obesity as a triggering factor<sup>28</sup>. Inflammatory swellings such as *Sharavika*, *Kacchapika*, *jalini*, have been explained as difficult to treat in obese persons<sup>29</sup>. Prognosis of inflammation has been linked to obesity. This establishes the awareness of the relationship between inflammation and metabolic disorders.

*Charaka*, *Sushruta* and *Vagbhata* have considered *Vidradhi* or abscess as one of the 10 inflammatory swellings<sup>30</sup>. This could occur externally (in the skin, muscle and ligament) and also internally (in vital organs)<sup>31</sup>.

Inflammation has been understood as a symptom of an abscess<sup>32</sup>. The site for

internal abscess with associated inflammation have been listed as heart (pericardial region included?) pharynx, liver, spleen, kidneys, bladder, pelvic and inguinal regions<sup>33</sup>.

Neoplasia (*granthi*) has been considered a form of hard elevation occurring due to non resolving of oedematous inflammation.

Dietary (improper diet, eating too much salt) and lifestyle factors, suppression of natural urges were considered in *Ayurveda* as those favouring the formation of inflammation.

Mention is made of certain diseases like cough, diarrhoea, anaemia and abdominal diseases like enlarged liver enlarged spleen and peritonitis causing oedema/inflammation.

*Krimi* or infection is mentioned as an aetiological factor for inflammation but has not been dealt with in detail. Rather the aggravation of *tridosha* is considered

as *Ayurveda* follows the humoral theory of diseases.

*Shotha* has been mentioned as a complication of *pandu* (anemia)<sup>34</sup>. The

general symptoms of inflammation are heaviness, instability, an elevation of temperature of veins and discoloration.

Table 1: *Shotha* as a symptom of disease

Sl. No.	Sanskrit Name for the Disease	English Equivalent
1.	<i>Upajihika</i> ( Charaka Sutra Sthana 18.19)	Glossitis
2.	<i>Galashundi</i> ( Charaka Sutra Sthana 18.20)	Uvulitis
3.	<i>Visarpa</i> ( Charaka Sutra Sthana 18.23)	Erysepals
4.	<i>Galagraha</i> ( Charaka Sutra Sthana 18.22)	Throat infections
5.	<i>Galagand</i> ( Charaka Sutra Sthana 18.21)	Goitre
6.	<i>Mruth bhakshana janya pandu</i> ( Ch Chi 16.28)	Anaemia that originates by eating mud
7.	<i>Kumbha kamla</i> ( Charaka Chiktsa Sthana 16.38)	Hepatitis
8.	<i>Sandhigataavata</i> ( Charaka Chiktsa Sthana 28.37)	Oestoarthritis
9.	<i>Vatarakta</i> ( Charaka Chiktsa Sthana 29.21)	Gout

## CONCLUSION

The exhaustive information of inflammation in the *samhitas* indicates a good level of understanding of the subject. Degenerative disorders like Diabetes, Atherosclerosis, Parkinson's syndrome, Alzheimer disease, osteoarthritis and rheumatoid arthritis share a common pathological feature of inflammation<sup>35</sup>. Obesity, aging and metabolic syndrome is also characterized by a low grade chronic inflammation. Inflammation also precedes most cancers and is considered a hall mark of the neoplastic process<sup>36</sup>. Other than neuro-degenerative conditions *Ayurveda* too considers inflammation either as a cause, symptom or complication of degenerative conditions. Obesity has been considered a bad prognostic feature in persons with inflammatory conditions. Hence there is a kind of shared pathology between cancers and metabolic syndrome and the common pathway is inflammation due to disturbance in micro channel circulation or rather of diffusion. The obstruction of micro channels by *Aama* (toxic waste of metabolism) is responsible for loss of homeostasis, inflammation and tissue damage<sup>37</sup>. Accordingly *Ayurveda* believes that *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<sup>38</sup>. Emphasis is laid on purificatory procedures, Panchakarma or detoxification as it is called these days is for clearing clogged channels both gross and subtle. Considering this, the scope of *Ayurveda* in preventive oncology and prevention of degenerative diseases and metabolic disorders is yet to be appreciated.

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