



Vishaghna Property of *Haridra* (*Curcuma longa*): A Review

Author: Narayan Pandey¹

Co Authors: Anita Sharma² and Shankar Gautam³

^{1,2}PG Dept. of Agadtantra, National institute of Ayurveda, Jaipur, Rajasthan, India

³PG Dept. of Kayachikitsa, National institute of Ayurveda, Jaipur, Rajasthan, India

ABSTRACT

Poisoning being the major health problem in modern era which is increasing day by day. There are different sources from where people are consuming poison directly or indirectly. Now a days poisoning is found everywhere, like junk food with chemical preservatives, different kinds of growing things like rice, wheat or vegetables which contains pesticides. Water, air, soil is being polluted due to different human behaviour, which causes interfere with human health. According to *Ayurvedic* point of view, there are different types of poison like *Sthavar Visha*, *Jangam Visha*, *Gara Visha*, *Dushi Visha*. So, after taking such poison shows harmful effect in human health which leads different kinds of diseases to death. So, to protect from such kinds of poisoning Ayurveda has mentioned different types of detoxifying (antidotes) *Dravyas* that helps to diminish or destroy the poisonous effect in human body. *Acharya Charak* has mentioned ten *Vishaghna Kashaya* named as *Vishaghna Mahakashaya*. Among them *Haridra* is one. *Haridra* which belongs to *Vishaghna Gana* has *Ruksha*, *Laghu Guna*, with *Tikta*, *Katu Rasa*, with *Katu Veepaka*, and *Ushna Virya* with *Kapha Vata Shamak* properties. *Haridra* show detoxifying activity with anti-inflammatory, anti-bactericidal, anti-fungal, anti-carcinogenic effect.

Key Words: *Haridra*, *Curcuma longa* Linn, *Turmeric*, *turmeric powder*, *Antidote*, *Prativisha*, *Visha*

INTRODUCTION

There are eight branches of Ayurveda, which has been written in Different *Samhita*. Among them, *Agadtantra* is one, which deals with all kind of poisons produced by different types of Snake, Spider, Scorpion, Rat, etc. animals, plants, combination of different types of poisonous or non-poisonous things including their properties, their actions, sign and symptoms and their management.¹ In Ayurveda, various *Visha* has

been mentioned like *Sthavar Visha*, *Jangam Visha*, *Gara Visha*, *Dushi visha*. After intaking of such poison through different route will kill the person immediately, or after long time due to its strength of properties.

Where *Acharya charak* has described about the poison in detail on the chapter *Vishachikitsitam* and *Acharya Vagbhata* has mentioned *Visha Chikitsa* under the *Dransta Chikitsa*.



Poison is a substance (may be solid, liquid or gaseous) which if introduced in the living body or brought into contact with any part thereof will produce ill-health or death by its constitutional or local effects or both.² It's another definition is "A substance, either natural or synthetic which will lead to injury of living tissue or damage living tissues or show fatal effect on the body, whether it is ingested, inhaled or absorbed or injected through skin. All these harmful effects may show immediate or after long term³.

Thus, by above definition *Visha* and poison are seemed to be analogous to each other. *Acharya Sushruta* has mentioned its action along with its ten properties. The properties of *Visha*, due to its *Ruksha Guna* produces Roughness which aggravates *Vata Dosha*, *Ushna Guna* produces hotness which aggravates pitta and *Rakta Dosha*, *Tikshna Guna* produces irritant like effects, *Sukshma Guna* produces minuteness which leads to entry into different organs and produces impurities, *Vyawayi Guna* produces spreading to different system through circulating system, *Vikashi Guna* produces destruction of *Dosha Dhatu Mala* along with *Oja*, *Laghu Guna* produces lightness property which causes difficulty in treatment (*Dushchikitsya*), *Avipaki Guna* produces difficult to eliminate that makes trouble for long⁴.

All kinds of properties of poison will show inside the body, finally it leads to death of person. There are mainly four steps of poison: poison, the poisoned organism, injury or damage to the cells, and signs and symptoms and leads to death.³ For

this process, first the organism should be exposed to toxic chemical substances. Then there is accumulation of toxic level in the related tissue or organs, then it leads to damage or injury to the cells which interferes with the normal function. There is development of sign and symptoms and if the level of toxicity being too much then death may result.

Epidemiology

The world Health Organization (WHO) estimates annually data that the total number of acute unintentional poisoning throughout the world ranges from 2-3 million cases, of which one million are severe poisoning having 20000 death annually. While there are 200000 suicides among the estimated intentional poisoning number of about 2 million. The accurate number of incidences may be higher, because most of the cases of poisoning are going unreported⁵.

There are various treatment modalities for poisoning effect but specific management is lacking except conservative management. Thus, effective drug must be identified to combat these morbid poisons. In Ayurveda classics, there are so many *Vishaghna Dravyas*, among them *Aacharya Charak* has mentioned ten *Visaghna Kashaya* named as *Vishaghna Mahakashaya*⁶. Among various drugs used as *Vishaghna* (anti poisonous), *Haridra* is one among them and is also one component of *Vishaghna Mahakashaya*. In an order to add on some effort to find the effective medicine, we have reviewed the *Vishghna* properties and the role of *Haridra*. In this Article, *Vishaghna* property of *Haridra* will be elaborated,



evaluated and discussed along with scientific justification.

Aims and Objectives:

- To review the *Vishaghna* property of *Haridra* in *Ayurveda* texts and its role in Poison.
- To evaluate, elaborate and discuss the *Vishaghna* property of *Haridra*.

MATERIALS AND METHODS

The text book of *Ayurveda* with its respective commentaries has been reviewed thoroughly. The text book of modern medical sciences and peer reviewed indexed medical journals has also been referred to review as material of this topic. The keywords used are *Haridra*, *Curcuma longa*, Turmeric, Antidote, *Prativisha*, *Visha*.

Ayurveda review:

Classification and properties of *Visha*:

Charak has classified two types of *Visha* named as *Sthawar* and *Jangam Visha*. *Acharya Vagbhat* has classified *Visha* into two groups⁷: a) *Akritim visha* (including *sthawar* and *Jangam Visha*). b) *Kritim Visha* (including *Gara Visha*: produced from mixing of different medicinal herbs). *Sthawar Visha*: poison obtained from chemical extraction of plants. *Jangam Visha*: produced by animals like snake, scorpion etc. Accordingly, *Acharya Sharangadhar* has classified *Visha* into three groups named as *Sthawar*, *Jangam* and *Kritim*. Where again *Kritim Visha* has been sub-classified into *Gara* and *Dushi Visha*⁸.

According to *Acharya Shusruta* has mentioned the ten properties of *Visha*. These are: *Ruksha* (Roughness), *Ushna* (Hotness), *Tikshna* (Irritant),

Sushma (minute), *Aashu* (Quick acting), *Vyavayi* (Quickly absorbed), *Vikashi* (Slackening), *Vishada* (non-slimy), *Laghu* (lightness) and *Apaki* (indigestible)⁴. *Acharya Charak* has also mentioned the properties of poison like that of *Sushruta* but in place of *Apaki* mentioned *Anirdeshya Rasa* (indistinct taste)⁹. *Acharya Sharangadhar* has mentioned eight properties of *Visha*, these are *Vyavayi* (Quickly absorbed), *Vikashi* (slackening), *Shusma* (minute), *Kshedi* (pricking/breaks), *Madavaha* (ruttishness), *Aagneya* (fire/hot), *Jivithara* (destroy life) and *Yogavahi* (promoting)⁸.

Dushi visha: When we take *Sthawar* (plant product), *Jangam* (Animal product) or *Kritim* (artificial) as a food or in any forms in our daily life, during metabolic process some by product (toxic) product will collect in our body, after long time it will be deposited and increase inside the body, which cannot be eliminated completely by using different kinds of medicine or by air, heat from our body, but after exposure in such environment, its properties will show less effect (or having less potent) and having covered with *Kapha* (mucoïd things) from outside, it does not show any immediate effect. In long term it will show different kinds of curable or non-curable diseases. It is also called slow poison¹⁰.

Similarly, *Vagbhat* has defined the *Gara Visha* that poison which cannot be eliminated from our body by taking different kinds of medicines having *Vishaghna* property or exposing to fire, sunlight or open ventilated place, such type of medicine or acting cannot completely destroy the properties of



Visha, just reduces the potency of *Visha*. Thus, produced poison with low potency is called *Dushi Visha*. This type of poison is covered with *Kapha* (Mucoid particle) and does not kill immediately¹¹. In another terms, the ingestion of all kinds of foods that persist within the body for a long time with opposite properties to usual physiological properties contributes to the production of *Dushi Visha* leading to vitiation of *Doshas* and *Dhatus*. As *Diwa Swapna* (sleeping at day time) causes vitiates of our body system i.e., *Tridosha* and *Sapta Dhātu* by aggravation of *Visha*, leads to decrease or impaired *Oja*. This interferes with the body system and gradually decreases our body's defence mechanism. Then different types of opportunistic diseases can easily attack.

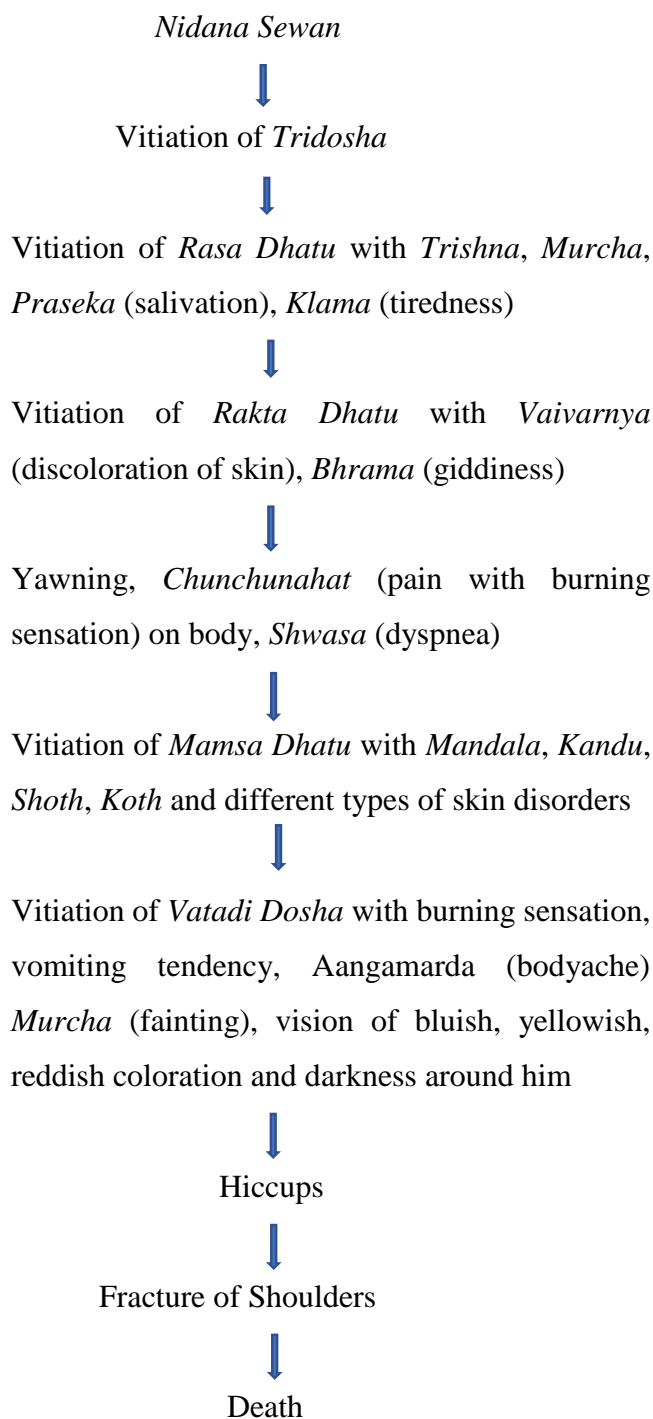
Gara Visha:

When we take different parts of poisonous animal, like their stool, urine for different purposes, different kinds of medicine or anything with opposite properties (i.e., *Viruddha Aahar-Ausadh*), or with low potency is called *Gara*, which in long time shows toxic effect called *Gara Visha*¹².

In another terms, it produces the combination of living and non-living substances containing minimum toxic properties, such as 18 types of *Viruddha Aahara*, as described in *Charak Samhita*, which takes long time to digest inside our body. After regular using either externally or internally, slowly there is production of poisonous substances which interfere with our defensive mechanism in different system which finally different system wise diseases like related with

skin diseases (externally), respiratory, cardiovascular disorders etc. that may be curable or not-curable¹³.

Mode of action of poison (on the basis of *Visha Vega*)¹⁴



Mode of action of *Visha* (especially for skin disorders):



Sources of poison: 1) Domestic and household sources. 2) Agricultural and horticultural sources. 3) Industrial sources. 4) Commercial sources. 5) Food and drinks. 6) From use as drug and medicine. 7) Miscellaneous sources

↓
Tridosha Prakopa (due to *Visha* properties)

↓
Reaches to *Twak*, *Rakta*, *Mamsa*, *Ambu* and produces *Shaithiyya*

↓
Further vitiation of *Dosha* occurs

These *Doshas* gets enlodged at the place of *Dhatu Shaithiyya* (*Twak*, *Rakta*, *Mamsa*, *Lashika*)

↓
Produces skin disorder

Mechanism of *Visha* effect (on the basis of properties):

Acharya Sushruta has mentioned its action along with its ten properties. the properties of *Visha*, due to its *Ruksha Guna* produces Roughness which aggravates *Vata Dosha*, *Ushna Guna* produces hotness which aggravates pitta and *Rakta dosha*, *Tikshna Guna* produces irritant like effects, *Sushma Guna* produces minuteness which leads to entry into different organs and produces impurities, *Vyawayi Guna* produces spreading to different system through circulating system, *Vikashi Guna* produces destruction of *Dosha Dhatu Mala* along with *Oja*, *Laghu guna* produces lightness property which causes difficulty in treatment (*Dushchikitsye*), *Avipaki Guna* produces difficult to eliminate that makes trouble for long⁴.

General Sign and symptoms of poison:

When poisonous food comes in contact with skin, it causes burning sensation of palm, falling of nail etc¹⁵. When poisonous food comes in contact with mouth it causes glossitis, stomatitis with burning sensation, senseless of tongue, excessive salivation (due to stimulation of saliva) and when enters into stomach, it causes fainting, vomiting, diarrhoea, flatulence, burning sensation of stomach, tremor and impairment of vision. Later after entering into intestine, it causes burning sensation, fainting, diarrhoea, excessive thirstiness, impairment of vision, flatulence, *Pandu*=anemia, *Daurvalya* (infirmity)¹⁶. When poison comes in contact with teeth and tongue via toothpaste and tooth brass, it shows symptoms like inflammation of tongue, gums, palate, lips with numbness. Application of massage materials mixing with poison it causes blistering, pain discharges and *Paka* (ripe), excessive sweating, cracking of skin.

Specific Sign and symptoms of *Gara Visha*:

Anemia (*Pandu*), weight loss (*Krishna*), *Agnimanda*, cough (*Kaas*), dyspnoea (*Swash*), Fever (*Jwara*), sleepiness (Due to opposite direction of *Vayu*). Enlargement of stomach, liver, spleen. Laziness, general swelling of the whole (anasarca), flatulence, thinning of upper and lower limbs. *Gara Visha* patients can have dream of cats, monkeys, mongooses or several kinds of animals¹².

Specific Sign and symptoms of *Dushi Visha*:

Loose motions, decreases brightness (*Malin Kanti*), vitiation of *Rakta* (blood), thirstiness, low appetite, multiple episodes of fainting (*Murcha*),



vomiting, slurring of speech, along with *Dushyodar (Sannipatodar)*¹¹.

Modern science review:

Action of poison:

Local: By chemical destruction by corrosives, congestion and inflammation by irritants, Effect on motor and sensory nerves E.g., tingling sensation of skin and tongue by aconite.

Remote: Remote action produced by shock, acting reflex through severe pain, or exerting a specific action on certain organs and tissues.

Combined: Chemicals like carbolic acid, oxalic acid and phosphorus have local and remote actions¹⁷.

Mechanism of poison:

1) Toxicity involves delivery of toxicant to its target or targets which causes interactions with endogenous target molecules that stimulates perturbations in cell function or structure or there may be the initiation of repairing mechanism of the molecular or tissue level.

2) Toxicity substance changes from one chemical to another called biotransformation which converted to harmful products called toxication or metabolic activation.

3) Apoptosis (cell death) is a process whereby breakdown of cell into smaller fragments which then phagocytized by adjacent cells or macrophages without any inflammatory response.

4) Sustained (preserved) elevation of intracellular calcium becomes harmful, which can result in a) depletion of energy reserve occurs due to inhabitation of ATPase used in phosphorylation, b) impairment (dysfunction) of micro filaments c)

Activation of hydrolytic enzymes d) generation of reactive oxygen and nitrogen species (ROS and RNS).

4) Progression of cell injury towards necrosis (cell death). It occurs when molecular repair mechanisms are inefficient or molecular damage is not reversible.

5) Insufficient functions of various repair mechanism due to chemical carcinogenesis, including a) failure of DNA repair b) failure of apoptosis c) failure to terminate proliferation.

The cellular mechanisms that contribute to the manifestation of toxicities are overviewed by relating a series of events that begins with exposure, involves a multitude of interactions between the invading toxicant and the organism and culminates toxic effect¹⁸.

Antidote (*Prativisha*):

Antidotes are remedies which counteract or neutralizing the effect of poison without causing harm to the body¹⁹. It is also called anti poison.

Ayurveda concept:

There are four Vedas, which are mentioned in Ayurveda among them Atharvaveda is one. *Atharvaveda* has mentioned in the form of *Tabuva* and *Tastu* the medicinal herbs which has capacity to destroy or minimize the effect of snake poison²⁰. *Acharya Chakrapani* has been stated in *Ayurveda Deepika* that the substance which destroy the poison or counteract the poison is called *Prativisha*²¹. *Acharya Dalhan* has also mentioned in *Nibanda sangraha* that any substances that after using has ability to disappear and the medicine which can use to treat poison is



called *Agad*²². From this we can say that, those compounds that alter the action of poison in the body to prevent, reverse or mitigate the toxic effects are called antidotes.

Modern concept

On the basis of mechanism of action, antidote has been classified into mechanical, chemical, physiological¹⁹. In toxicology, there are different mechanisms that direct antidote therapy to alter the toxin load and length of exposure and also to increase the toxicity threshold of the victim. Among them, there are four basic mechanisms through which antidote therapy shows in poisoning (toxicology)²³.

- 1) Decreasing the level of active toxic level
- 2) Inhibiting the site of action of the toxin
- 3) Decreasing the level of toxic metabolites
- 4) By preventing the effects of the toxin.

In Ayurveda, *Aacharya Charak* has mentioned *Vishaghna Mahakashaya* having ten Ayurvedic *dravyas*, among which *Haridra* is one²⁴.

Haridra:

Sanskrit synonyms: *Haridra*, *kaancani*, *Nisha*, *Varavarnini*, *Gauri*, *Krimighni*, *Yoshitpriya*, *Hattavilasini*. Its Latin name is *Curcuma Longa* Linn. Belongs to family: Zingiberaceae with its English name: Turmeric. Chemical constituents most commonly found are Curcumin, Curcumin, Terpene, Cholesterol, Starch, Albuminoids, and Volatile oil²⁵.

Properties: Samhita/ Nighantu

Guna: *Ruksha*^{26,27,28}, *Ruksha*, *Laghu*²⁹ *Rasa*: *Tikta*²⁶ *Katu*, *Tikta*³⁰, *Tikta*, *Katu*^{28,29} *Tikta*, *Katu*, *Kashaya*.³¹ *Vipaka*: *Katu*^{29,31} *Virya*:

Ushna^{30,31,30,31} *Dosha karma*: *KaphaVata shamak*^{26,32,30} *Kapha Vata Shamak* with *Pitta Nashak*³³, *Kapha Pitta Nashak*³², *Pittahaar*³³, *Kaphaghna-Vatahaar*.

Haridra has been mentioned under *Kandughna*, *Kusthagna*³⁴, *Lekhaniye*³⁵, *Tiktaskandha*, *Shirovirechana Gana*, *Haridradi gana*, *Mustadi gana*³⁶.

Due to presence of different kinds of *Rasa*, *Guna*, *Virya*, *Veepak*, *Haridra* acts as *Kusthaghna*, *Brananashak*, *Kantidayak* and *Krimighna*²⁶. It is used in *Twakvikara* like *Shitpitta* (*Urticaria*), *Vrana* (wound due to infection)²⁷, It acts in *Koth* (skin disorder, gangrene), itching sensation (due to fungal infection, *Krimi*), *Twak Dosha*, *Vrana*, *Krimi*, and destroys the effect of *Visha*. It reduces the properties of *Pitta*, re-pigmentation of skin (improvement of skin colour), *Twak Dosha Nashak*, and destroy the effect of *Poison*^{28,33}. It is also used in *Rakta Vikaar* (blood impurities), *Kustha Roga*, *Kandu*, *Vrana* (wound), *Twak roga* (skin diseases), *Udarda* (allergic dermatitis), *Varnyakar* (bringing of natural colour of skin), *Paama* (scabies) and even used as *Visaghna*, *Vrana Ropan*, *Kusthaghna*, *Kandughna*, *Pittahara*³⁰. It also acts as *Rakta Shodhak*, *Kaphaghna*, *Vaathara*, *Vishaghna* and *Krimighna* and used in *Kaphavikara*, *Raktavikara*, *Vrana* (wound)²⁹.

Its acts upon circulatory system as *Rakta prasadan*, *Raktabardhak*, *Raktastambhan* and in skin acts as *Kusthaghna* and when we used *Haridra* for regularly in our meals, it acts as



Vishaghna and *Katupaustik* (i.e., even being *Katu Rasa*, it nourishes all *Dhatu*s in our body)^{37,38}.

Anti-poisonous effect of *Haridra* in modern literatures:

Pharmacological activities:

Anti-inflammatory effect of *Haridra*: A number of receptors which involve in inflammation like phospholipase, lipoxygenase, cyclooxygenase (COX 1,2), leukotrienes, thromboxane, prostaglandins, hyaluronidase, nitric oxide, monocyte chemoattractant protein-1(MCP-1), collagenase, elastase, interferon- includible protein, Tumor necrosis factor (TNF) and interleukin-12 all these are inhibited by the *curcuma longa*³⁹.

Haridra shows different types of mechanisms responsible for anti-cancer activity may be through 1) free radical scavenging activity 2) Antioxidant activity 3) Anti-mutagenic activity 4) blocking of NFkB. Curcumin has the properties to inhibition of nitro satin and anti-mutagenic activity against different environmental mutation in vitro⁴⁰. Modern in vitro study reveals that turmeric is a potent antioxidant, antimicrobial, anti-inflammatory, antimutagenic, antimicrobial and anticancer agent. Turmeric, used in cooking and in home remedies, has significant antioxidant abilities at different level of action. As an antioxidant, turmeric c extracts can scavenge free radicals, increase in antioxidant enzymes, and inhibit lipid peroxidation. Numerous lines of evidence suggest that turmeric exhibit anti-inflammatory activity⁴¹.

Discussion: The toxin and toxicity of poison and its antidotes have been mentioned since *Vedic* period. Many specific and non-specific *Visaghna* properties have been described in *Vrihatrayi*, *Laghutrayi*. Though there is no any mention about either *Gara* or *Dushi Visha* in classical texts, but due to its different antitoxic properties it can be used to detoxify in such *Visha*. Thus, it rejuvenates and enhances *Oja* (immunity) against diseases. With the references of various *Nighantus*, we can say that there is almost similarity in properties of *Haridra* i.e. *Katu*, *Tikta Rasa*, *Ruksha*, *Laghu Guna*, *Ushna Virya* and *Katu Vipaka*. The actions are almost similar as it alleviates skin disorder and obesity (*Medo roga*), purifies blood and is anti-poisonous. Due to use of different kinds of germ food and lack of extra physical activity, there is accumulation of fatty and toxic substances. These substances besides lodging in subcutaneous tissues also lodges in different organs like liver, pancreas, kidney etc. and in different channels i.e. *Srotas* like blood vessels. It will then cause vitiation of *Doshas* especially *Kapha* predominant. In *Ayurveda*, such accumulation of fatty and other toxic substances is known as *Dushi visha* which after certain duration causes different types of disease. *Haridra* due to its *Ruksha*, *Laghu guna* reduces the aggravated *Kapha dosha* and related *Dhatu*s i.e *Rasa*, *Meda*, *Mamsha*. This breaks down the *samprapti* of forming aggravated *Rasa dhatu* and inhibit the symptoms related to *Rasavridhi* and similarly break down the accumulation of *Mamsha Dhatu* and inhibit the



related symptoms like skin and muscle related diseases.

As the properties of *Visha* are similar to properties of pitta *Dosha*, *Haridra* having *Katu Rasa*, *Laghu Guna*, *Ushna Virya* and *Katu Vipaka* related to aggravation of *Pitta Dosha*, it should aggravate the *Visha* effect. But, due to its *Prabhava Guna* (*Vichitra Pratyarabdha*), it acts upon *Visha*. Thus, *Haridra* reduces the aggravated *Pitta Dosha* and related aggravated *Dhatu* i.e., *Rakta*. This then breaks the pathogenesis of accumulation of *Rakta Dhatu* and its related symptoms showing actions like blood purifier (*Rakta prasadak*), *Kustaghna* and *Vishaghna*. Due to its strong potent *Vishaghna* activity *Acharya Charak* may had mentioned this at first rather than other remaining *Vishaghna* drugs.

As it breaks the cyclo-oxygenase pathways, inhibits tumor necrosis factor and the anti-inflammatory, anticancer, free radical scavenging, anti-oxidant and antimicrobial activities validates the anti-poisonous effect of *Haridra* showing inhibition of different toxic effect in living beings at different level.

Conclusion: From above description we can conclude that *Haridra* is an important herb to maintain and treat many diseases. Due to its anti-oxidant, antitoxic, antimicrobial activity it shows *Vishaghna* property, so it may useful in many types of toxins present around us.

Key Message: *Haridra* is an important herb to prevent or treats most of the diseases.

Not only has the *Acharya Charak*, most of the *Nighantukara* described about the *Vishaghna*

property of *Haridra*. The acute, subacute or chronic toxicity (*Gara Visa* and *Dushi Visa*) are accumulating in our body day by day. In this condition here is time to known and re-evaluate the efficacy of *Haridra*.



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