Journal of Ayurveda & Holistic Medicine
www.jahm.co.in
eISSN-2321-1563
REVIEW ARTICLE OPEN ACCESS

A CRITICAL REVIEW OF *GARAVISHAM* AND HYPERSENSITIVITY REACTIONS

TANVI GUSAIN[1]* BRIJENDRA SINGH TOMAR[2] SATBIR KUMAR CHAWLA[3]

[1*]P.G. scholar, [2]Professor, [3]Asst. Professor, Dept of agada tantra, Institute For Ayurved Studies & Research (Formerly Shri Krishna Gov. Ayurvedic College, Kurukshetra), Kurukshetra.
Corresponding Author Email: tanvigusain7@gmail.com Access this article online: www.jahm.co.in

Submitted on- 07-01-24	Revised on- 18-01-24	Accepted on-18-02-24

ABSTRACT:

Background: *Agadatantram* beside dealing with different types of animal & plant poison, has a unique concept of combination of *Visha* which could be understood under the term *Gara*. *Garavisham* is a type of *Sanyogaj Visha* i.e., it can be a combination of *Savisha(toxic)* as well as *Nirvisha(non-toxic)*. Xenobiotics have been defined as chemicals to which an organism is exposed that are extrinsic to the normal metabolism of that organism. **Aim:** To have a better understanding of *Garavisham* with its current importance, to have a better understanding of the diseases occurring as an outcome of *Garavisham*, its relation with hypersensitivity is explored. **Objective**: understanding the modern day *Garavisham* w.r.t. xenobiotic. **Material & method:** literature review of *Garavisham* and hypersensitivity was taken from the *Brihattrayi Samhita* & pathology textbook respectively. Data for non-communicable diseases was obtained from google platform. **Result:** *Garavisham* is present as etiological factor in the pathology of various diseases like *Panduh, Krusatvam, Alpagni, Marmapradhamanam, Shotha, Udar Roga, Grahani Dosha, Yakshma, Jwar, Kasa(cough) & Shavsa* (breathing disorder) along with psychological factors altering the subconscious of a person through dreams. **Conclusion**: *Garavisham* can act as xenobiotics for the human body by creating an inflammatory response. Hypersensitivity reaction can be defined as the exaggerated response of immune system. It is somehow capable of provoking the immune system in short term as well as long term. There has been a growth in the burden of diseases like urticaria, rheumatoid arthritis, drug induced adverse reactions, cancer etc. The weight of these diseases has been ever increasing with the passage of time.

Keywords: *Garavisham*, Hypersensitivity, Immune system, Xenobiotics

INTRODUCTION

With the increment in newer health techniques and advancement in the medical healthcare, there has been subsequent decrement in death rates in India. It has been brought down from 28.161 in 1950s to 7.416 at present [1].

Even though overall mortality rate has been decreased, there is an increment in the proportion of death due to non-communicable diseases in India which has increased from 37.9% in 1990 to 61.8% in 2016, which is almost double. The four major NCDs are cardiovascular diseases, cancers, chronic respiratory diseases and diabetes which share four behavioural risk factors, unhealthy diet, lack of physical activity and use of tobacco & alcohol [2].

Role of *Garavisham(*artificial poison) might be a hidden factor in all of these non-communicable diseases as well as autoimmune diseases. Clinical toxicology involves the research, prevention and treatment of diseases caused by chemicals, drugs and toxins. On the other hand, *Agadatantram(toxicology)* can be understood as that unique branch of ayurveda, dealing with sign, symptoms and management of poisoning resulting from the bites of *Sarpa(snake venom poisoning), Keeta (insects poisoning), Loota(spider poisoning) & Mushakaadi(mouse venom poisoning)* etc and various poisons produced by improper combinations of substances or drugs or poisons [3].

Similarly, xenobiotics are any foreign substances or exogenous chemicals to which an organism is exposed that are extrinsic to the normal metabolism of that organism, such as drugs, pollutants, as well as some food additives and cosmetics [4]. Unlike toxicology, knowledge of *Agadatantram* is not only limited entirely to poisonous substances but rather covers all criteria whether it is a poison or drug. Even drugs which might not be harmful as a single entity until unless combined wrongfully are also considered *Vishah*.

Beside the *Sthavar(plant poison)& Jangam Visha(animal poison)*, there is a third category of *Krutrimavishah(synthetic poison)*. *Krutrimavishah* is the kind of *Visha* which is not of poisonous nature naturally but can act as *Visha* (poison) when administered. *Garavisham* is a *Krutrimavishah* which is originally not poison but is capable of acting deleteriously on the human body. It can be any substance for e.g., *Viruddh Aahar(disordered dieting-incompatibility),* cosmetics, environment pollution etc. when human body is exposed to these substances, it can generate an immune response inside the body.

MATERIAL AND METHODS

The literature review of *Garavisham* was done from *Charaka Samhita, Sushruta Samhita, Ashtanga Samhraga & Ashtanga Hrudaya*. Definition of hypersensitivity and its types with the associated diseases was obtained from the Harsh Mohan; textbook of pathology. The suspected pathophysiology taking place due to uptake of *Garavisham* was done on the basis of information obtained from the Guyton textbook of physiology.

DISCUSSION

Literature review of *Garavisham*

Definition

According to *Acharya Charaka*, *Garavisham* is prepared artificially by the mixture of various substances and is a causative factor in generating diseases. It takes a long time to get metabolised inside the body, therefore it does not produce instantaneous death of the person [5].

According to *acharya Sushrut* poison prepared from the pulverised body of the insects mentioned in the "*Keeta Kalpa*" can are considered as *Garavisham* [6].

In *Ashtanga Samgraha*, *Garavisham* has been given the status of *Krutrimavishah*, which is prepared by mixing of drugs. It is capable of causing the death either quickly, after sometimes or after a long duration of time or it may produce *Shopha* (edema), *Panduh* (pallor), *Udaram* (abdominal enlargement), *Unmadah* (insanity), *Arsha* (haemorrhoids) etc [7].

Source of *Garavisham*

Women in order to gain favour from their husbands, at times, administer their *Sweda* (sweat), *raja* (menstrual blood) *& Nanaangaj mala* (different types of waste products of their body*)* along with the food. Also, by women who are very near to king instigated by his foes, mixing it with the food is considered as *Garavisham [8]*.

Combination of parts of the body and excreta of various animals, *Viruddh Aushadhi, Bhasma* and the poisonous substances of mild potency is known as *Garavisham [9]*.

Modern interpretation of *Garavisham*

Sthavar Visha, Jangam Visha, drug induced toxicity, environmental pollutants *Ahitaashan/samashan, Viruddh Aahar*, food additives, pesticides, occupational exposure, cosmetics, consumption of alcohol & tobacco, opium, bhang, cocaine etc.

Table 1. Sign & symptoms of *Garavisham*

Sr.no.	*Charak Samhita[10]*	*Ashtang Samgraha [11]*
1.	*Panduh (pallor*)	*1.Panduh*
2.	*Krusatvam (emaciation)*	*2.Krusatvam*
3.	*Alpagnih (insufficient digestive power)*	*3.Kasa (cough)*
4.	*Marmapradhamanam(discomfort in vital organs)*	*4.Svasam (dysponea)*
		5.Jwar
5.	*Hastasvayathuh(swelling in hands), Padasvayathuh (pedal odema)*	*6.Vayupratilom swapnachintaparayan (sleep disturbances due to vayu pratiloma)*
6.	*Jatharam (abdominal enlargement)*	*7.Mahodar yakrut pleeha (GIT disturbances)*
7.	*Grahanidoshah (diseases due to malfunctioning of grahani)*	*8.Deenavak durbala alas (speech debility & laziness)*

8.	*Yakshma (pthysis)*	*9.Swapne gomayumarjar nakulvyalavanaran*
9.	*Gulmah (abdominal lump)*	*10.Praya pashyati shuskansh vanaspati jalashayan*
10.	*Kshayah(wasting)*	*(dreams of dried-up vegetation & water reservoirs)*
11.	*Jwarah(fever)*	*11.Krishnaatmanam gauro gauram ch kalak*
12.	*Swapne marjargomayuvyalan snakulan kapin(dreams of cats, jackals, wild animals, mongoose & monkeys)*	*12.Vikaran nasanayan pashyet vihateindriya(sees himself with distorted sense organs)*
13.	*Praya pashyati nadyadi shuskan svanaspateen(dried river & withered trees)*	
14.	*Kala cha gaura atmanam swpne gaurascha kalkam (dreams of opposite complexion)*	
15.	*Vikarna nasikam vaapi prapashyet vihateindriya (sees himself with distorted sensory organs)*	

Hypersensitivity [12]

Hypersensitivity is defined as an exaggerated or inappropriate state of normal immune response with onset of adverse effects on the body. The lesions of hypersensitivity are a form of antigen antibody reaction. These lesions are termed as hypersensitivity reactions or immunologic tissue injury, of which 4 types are described: type I, II, III and IV.

Depending upon the rapidity, duration and type of the immune response, these 4 types of hypersensitivity reactions are grouped into immediate and delayed type:

1. Immediate type in which on administration of antigen, the reaction occurs immediately. Immune response in this type is mediated largely by humoral antibodies (B cell mediated). Immediate type of hypersensitivity reactions includes type I, II and III.

2. Delayed type in which the reaction is slower in onset and develops within 24-48 hours and the effect is prolonged. It is mediated by cellular response (T cell mediated) and it includes Type IV reaction.

Type I: Anaphylactic (Atopic) Reaction[13]

Type I hypersensitivity is defined as a state of rapidly developing or anaphylactic type of immune response to an antigen (i.e., allergen) to which the individual is previously sensitized (anaphylaxis is the opposite of prophylaxis).

The reaction appears within 15-30 minutes of exposure to antigen.

Mediated by IgE antibodies

Etiological factor: genetic basis, environmental pollutants, viral infections.

It may manifest as a local irritant (skin, nose, throat, lungs etc), or sometimes may be severe and life-threatening anaphylaxis.

Systemic anaphylaxis:

i) Administration of antisera e.g., anti-tetanus serum (ATS).
ii) Administration of drugs e.g., penicillin.
iii) Sting by wasp or bee.

The clinical features of systemic anaphylaxis include itching, erythema, contraction of respiratory bronchioles, diarrhoea, pulmonary oedema, pulmonary haemorrhage, shock and death.

Local anaphylaxis:

1.Hay fever (seasonal allergic rhinitis) due to pollen sensitization of conjunctiva and nasal passages.

2.Bronchial asthma due to allergy to inhaled allergens like house dust.

3.Food allergy to ingested allergens like fish, cow's milk, eggs etc.

4.Cutaneous anaphylaxis due to contact of antigen with skin characterised by urticaria, wheal and flare.

Type II: Cytotoxic (Cytolytic) Reaction[14]

Type II or cytotoxic reaction is defined as reactions by humoral antibodies that attack cell surface antigens on the specific cells and tissues and cause lysis of target cells.

Mediated by IgG or IgM antibodies

Aetiology: HLA linked, exposure to foreign tissues/ cells e.g., autoimmune haemolytic anaemia, transfusion reaction, drug induced, type 1 DM etc.

Type III: Immune Complex Mediated (Arthus) Reaction [15]

Type III reactions result from deposition of antigen-antibody complexes on tissues, which is followed by activation of the complement system and inflammatory reaction, resulting in cell injury. The onset of type III reaction takes place about 6 hours after exposure to the antigen.

ETIOLOGY. Type III reaction is not tissue specific and occurs when antigen-antibody complexes fail to get removed by the body's immune system. For e.g persistence of low-grade infection, environmental antigen, autoimmune process.

e.g. rheumatoid arthritis, SLE (systemic lupus erythematous), drug induced vasculitis

Type IV: Delayed Hypersensitivity (Cell-Mediated) Reaction[16]

Type IV or delayed hypersensitivity reaction is tissue injury by cell mediated immune response without formation of antibodies (contrary to type I, II and III) but is instead a slow and prolonged response of specifically-sensitized T lymphocytes. The reaction occurs about 24 hours after exposure to antigen and the effect is prolonged which may last up to 14 days.

Cell mediated reaction.

Examples of type iv reaction.

Type IV reaction can explain tissue injury in following common examples:

1. Reaction against mycobacterial infection e.g., tuberculin reaction, granulomatous reaction in tuberculosis, leprosy.

2. Reaction against virally infected cells.

3. Reaction against malignant cells in the body.

4. Reaction against organ transplantation e.g., transplant rejection, graft versus host reaction.

In ancient times, combination of parts of the body and excreta of various animals, *Viruddh Aushadhi, Bhasma* and the poisonous substances of mild potency were considered as the source of *Garavisham*. Whereas the consumption of vegetables and fruits, which might be contaminated with pesticides, use of cosmetics such as shampoo, bathing soaps or lotions or living in an environment polluted area i.e., air pollution, water pollution, soil pollution, or the drug induced toxicity & list goes on. On the basis of rapidity & duration of response it is classified into immediate & delayed response of immune system. These all can be also considered under the category of xenobiotic. These xenobiotics like substances are capable of producing various responses inside body such as immune response, hypersensitivity, oxidative stress etc. on exposure to garavisham/xenobiotics, two types of responses can be observed, i.e., immediate response & delayed response. Immediate response is seen in the form of large amount of IgE antibodies in the blood whereas delayed response is due to activated T-cell. At the end, both of these collectively lead to tissue injury which in simple terms give rise to *garavisham roga's* (table 1).

Garavisham is present as etiological factor in the pathology of various diseases like *Panduh, Krusatvam, Alpagnih, Marmapradhamanam, Hastasvayathuh, Padasvayathuh , Udaram, Grahani Doshah, Yakshma, Jwar, Kasa(* cough) *& Svasam* along with psychological factors altering the subconscious of a person through dreams. These dreams are the result of affected *Manovaha Strotas*. And even correlated with the hallucinogenic effect of various drug intake such as opium, bhang, cocaine, heroine etc. further above diseases can be correlated with the inflammatory response leading to edema, pyrexia, bronchial asthma, hay fever, tuberculosis & autoimmune diseases like rheumatic fever, rheumatoid arthritis, myasthenia gravis or lupus erythematous etc. the pathology of all these diseases involves immune system.

While a desirable interaction between nanomaterial (xenobiotics) and the immune system may lead to beneficial outcomes such as vaccines or therapeutics for inflammatory and autoimmune disorders, an undesirable interaction may result in adverse outcomes such as hypersensitivity reactions and inflammation, or lowered response to infection and cancerous cells.[17]

A xenobiotic is all pervasive and can originate from environment, air, water, food additive, a drug, dietary supplements. antioxidants or dyes, emulsifiers, cosmetics, soaps, perfumes, nano-materials in earth's crust like silica, asbestos, industrial chemicals or pesticides.[18]

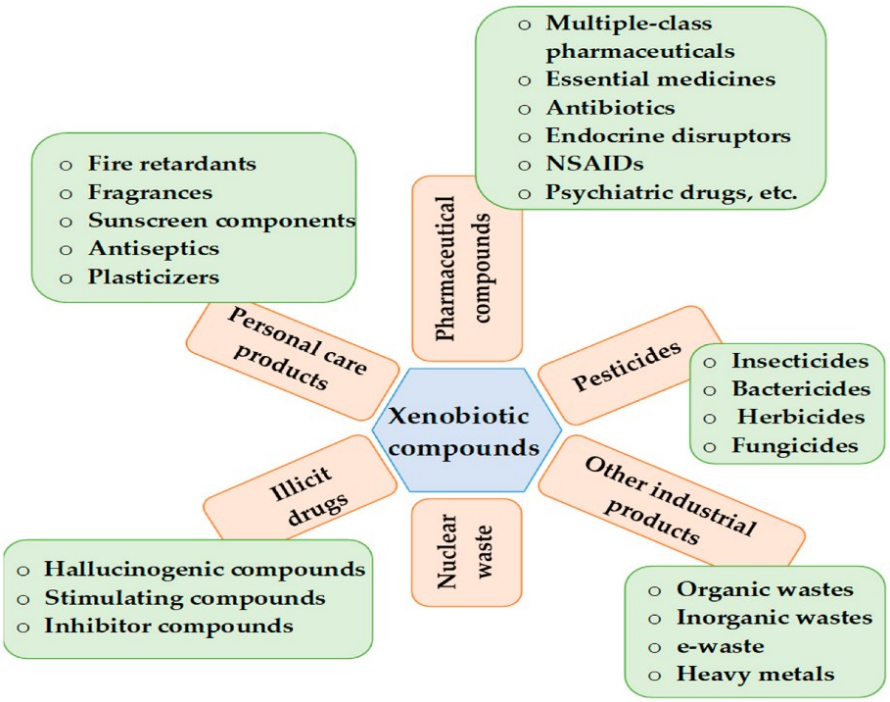

Fig.1 possible xenobiotic compounds[19]

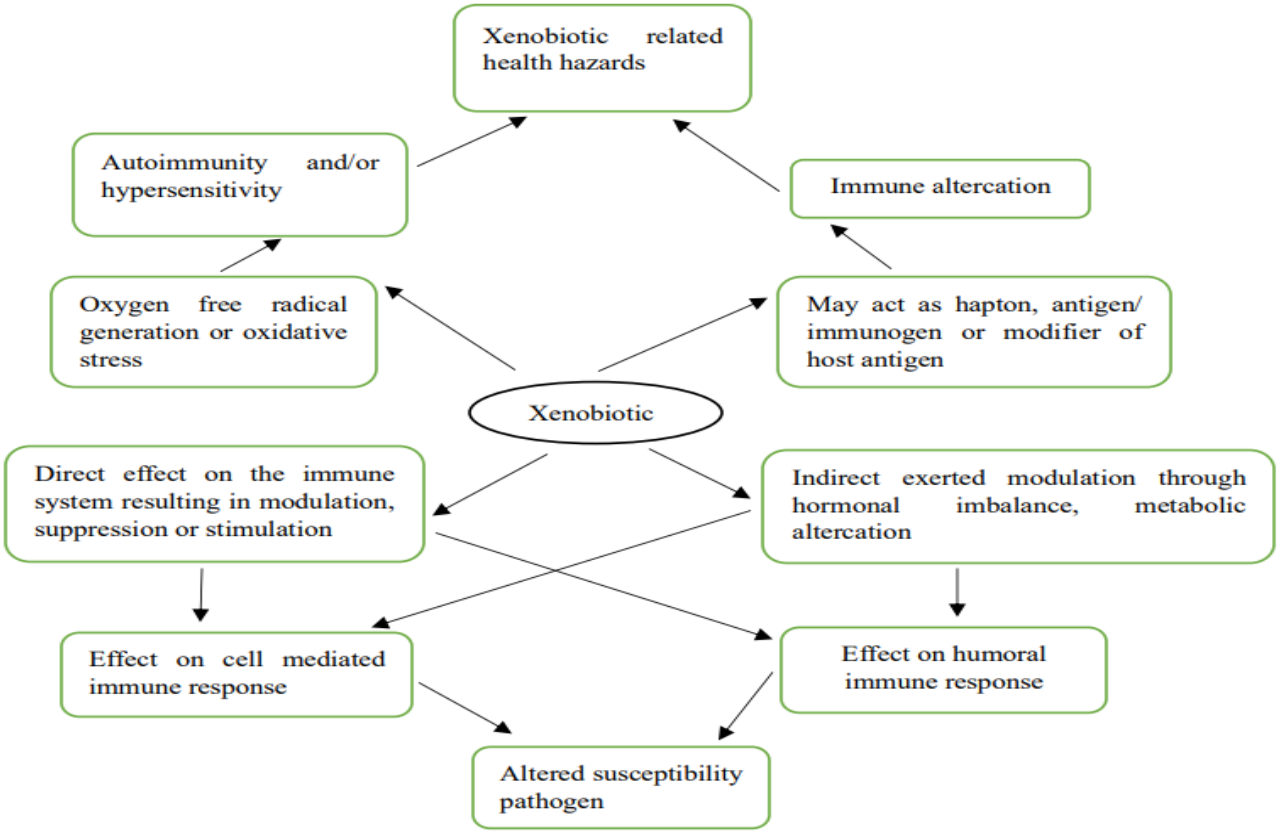

Image 2. realm of xenobiotic toxicity [20]

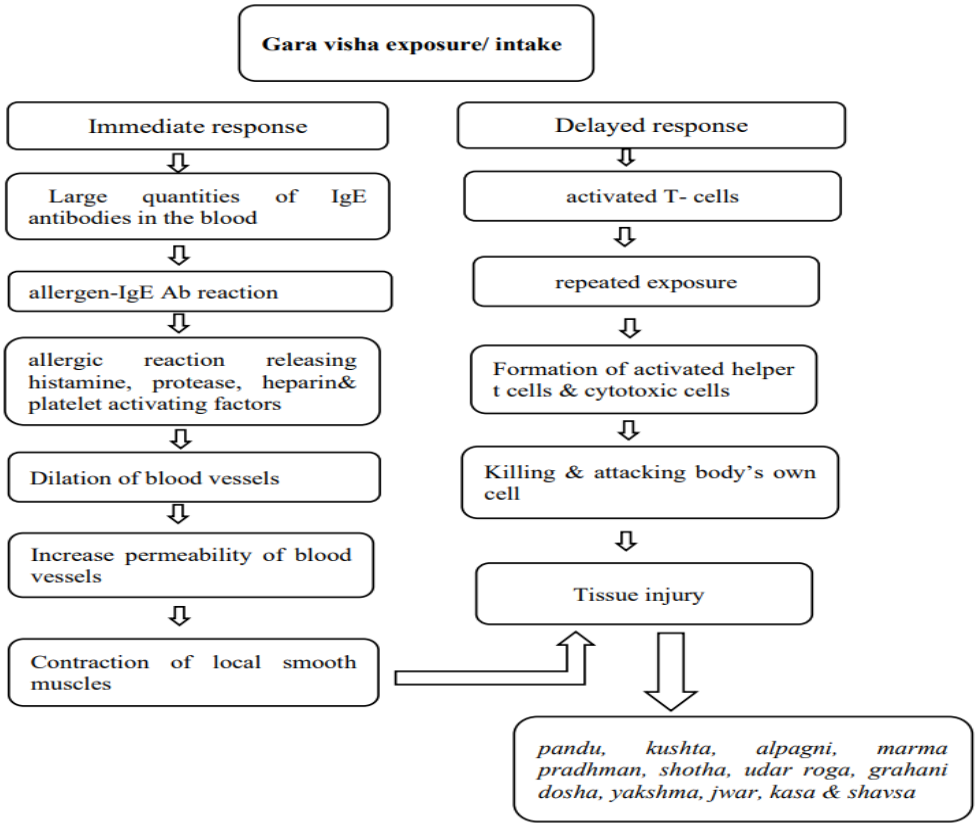

Image 3 Suspected pathophysiology of *Garavisham w.r.t* hypersensitive[21]

CONCLUSION

The ayurvedic terms *Garavisham & Dushivishah (* weak poison) are considered as poison which when introduced in body is capable of producing the ill effects or death by its systemic or local effects. Same concept can be understood through the term xenobiotic such as drug, environmental pollutants, food additives or cosmetics. These xenobiotics are modern day *Garavisham* source. And the diseases mentioned in *Samhita & Samgraha* period caused due to exposure to *Garavisham* are still relevant today even after centuries. Pathology taking place after being exposed to *Garavisham*, can be considered as the outcome of hypersensitivity, whether delayed or immediate response, one thing is common i.e., the immune system of an individual. Its not only about how we eat, but rather how we live. We all are surrounded by immense amount of *Vishah*, along with increment in diseases, graph of which will also keep going up with time as long as preventive measures are being taken. So basically, everything

surrounding us is a *Garavisham* which when gets accumulated inside the body years after years, becomes *Dushivishah (weak poison)* in a long run and forms a part of clinical toxicology. Still it needs to be proved on clinical level which would further support the above conclusion as there is no clinical evidence available currently. Therefore, there is a need of awareness among people regarding *Garavisham & Dushivishah*. These are an important part of the modern-day toxicity which affects each and every one of us on the daily basis. Introducing the concept of sustainability, as we thrive on the same environment, here the treatment starts from taking care of environment and later on the *Shodhan(detoxication therapy) & Shaman therapy(*. And inculcate the clinical toxicology in the field of *Agadatantram.*

FUNDING: nil

REFERENCES

1.*India death rate 1950-2023 MacroTrends*. Available at: https://www.macrotrends.net/countries/IND/india/death-rate

2. *Status of non-communicable diseases (ncds) in India Press Information Bureau*. Available at: https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1796435

3.Ambikadutta Shastri(editor),Commentary: Ayurveda -Tattva-Sandipika on Susruta Samhita, Sutrasthana, Vedoutpatti adhyaya, Chapter 1, Verse 14, Chaukhambha sanskrita sansthana;2018: 6.

4.Gautam biswas, Review Of Forensic Medicine And Toxicology; 5th Edition Chapter 35, Jaypee Brothers' Medical Publishers,2021;509

5. Kashinath Pandeya & Gorakhnath Chaturvedi(editor), hindi commentary on Charaka Samhita, Vishachikitsa Adhyaya, Chapter 23 verse 14 Chaukhambha Sanskrita Sansthana;2016:626

6. Ambikadutta Shastri(editor), Commentary: Ayurveda -Tattva-Sandipika on Sushruta Samhita, Kalpasthana, keeta kalpa adhyaya, Chapter 8,Verse24 , Chaukhambha Sanskrita Sansthana;2018:82.

7. Atrideva gupta, Hindi Commentary On Astanga Samgraha, Visha Pratishedha Adhyaya, Chapter 40 Verse 16 Chowkhamba Krishnadas Academy, Varanasi; 2019:341

8. Kashinath Pandeya & Gorakhnath Chaturvedi(editor), hindi commentary on Charaka Samhita, Vishachikitsa Adhyaya, Chapter 23, verse 233, Chaukhambha Sanskrita Sansthana; 2016:665

9. Kashinath Pandeya & Gorakhnath Chaturvedi(editor),, hindi commentary on Charaka Samhita, Vishachikitsa Adhyaya, Chapter 23, verse 233, Chaukhambha Sanskrita Sansthana; 2016:665

10. Kashinath Pandeya & Gorakhnath Chaturvedi(editor), hindi commentary on Charaka Samhita, Vishachikitsa Adhyaya, Chapter 23, verse 234-237, Chaukhambha Sanskrita Sansthana;2016:665

11. Atrideva gupta , Hindi Commentary On Astanga Samgraha, Visha Pratishedha Adhyaya, Chapter 40,Verse 85, Chowkhamba Krishnadas Academy, Varanasi; 2019:348

12. Harsh Mohan, Textbook of Pathology; 6th edition chapter 4, Jaypee Brothers Medical publishers (P) Ltd; 2010;73

13. Harsh Mohan, Textbook of Pathology; 6th edition chapter 4, Jaypee Brothers Medical publishers (P) Ltd;2010;73-74

14. Harsh Mohan, Textbook of Pathology; 6th edition chapter 4, Jaypee Brothers Medical publishers (P) Ltd;2010;76

15. Harsh Mohan, Textbook of Pathology; 6th edition chapter 4, Jaypee Brothers Medical publishers (P) Ltd; 2010;76

16. Harsh Mohan, Textbook of Pathology; 6th edition chapter 4, Jaypee Brothers Medical publishers (P) Ltd,;2010;77

17. Srinivas R, Vasudeva M S, Raghuram Rao A. Xenobiotics in Health and Disease: The Two Sides of a Coin: A Clinician's Perspective. OAJT[internet] 2020Aug8.Available from : https://juniperpublishers.com/oajt/OAJT.MS.ID.555641.php

18. Srinivas R, Vasudeva M S, Raghuram Rao A. Xenobiotics in Health and Disease: The Two Sides of a Coin: A Clinician's Perspective. OAJT[internet] 2020Aug8.Available from : https://juniperpublishers.com/oajt/OAJT.MS.ID.555641.php

19. Kumar, D.; Chopra, S. Xenobiotic Compounds in the Environment: Their Fate, Transport and Removal. In Proceedings of the 3rd National Conference on Medical Instrumentation, Biomaterials and Signal Processing (NCMBS-20), Sonepat, India, 26–27 February 2020;96–102.

20.https://nopr.niscpr.res.in/bitstream/123456789/385/1/IJBB%2045%281%29%20%282008%29%207-15.pdf

21. John E.Hall, Textbook Of Medical Physiology; South Asian Edition Chapter 25, Unit Printing Press Imt Manesar (Haryana),;2015;141

CITE THIS ARTICLE AS

Tanvi Gusain, Brijendra Singh Tomar, Satbir Kumar Chawla. A critical review of Garavisham and hypersensitivity reactions. *J of Ayurveda and Hol Med (JAHM)*. 2024;12(2):30-39

Conflict of interest: None

Source of support: None