



ISSN 2456-3110

Vol 6 · Issue 4

July-Aug 2021

Journal of
**Ayurveda and Integrated
Medical Sciences**

www.jaims.in

JAIMS

An International Journal for Researches in Ayurveda and Allied Sciences



Maharshi Charaka
Ayurveda

Indexed

Effects of Food Pollution on Human Health and Its management through *Panchakarma*

Deepti Negi¹, Rashmi Joshi², Kanchan Thakur³, Anupama Kumari⁴

¹Assistant Professor, Department of Agad Tantra Evum Vidhi Vaidyaka, Dev Bhoomi Medical College of Ayurveda & Hospital, Dehradun, Uttarakhand, India.

²Assistant Professor, Department of Panchkarma, Motherhood Ayurveda Medical College, Roorkee, Uttarakhand, India.

³Assistant Professor, Department of Panchkarma, Dev Bhoomi Medical College of Ayurveda & Hospital, Dehradun, Uttarakhand, India.

⁴Assistant Professor, Department of Agad Tantra Evum Vidhi Vaidyaka, Smt. Urmila Devi Ayurvedic College of Medical Science and Hospital, Kharkan, Hoshiyarpur, Punjab, India.

ABSTRACT

Air, water and food are the basic necessities of life. If one pillar is disturbed then we can't expect the other two works positively for our health. In *Ayurveda* there is description of *Triya Upstambh* where food (*aahar*) placed in first place, which shows the importance of food. We can define food pollution as, the presence of toxic chemical and biological contaminants which are not naturally part of our food. Examples are preservatives, taste enhancer, coloring agents. In present time our food is also contaminated by fertilizers, pesticides and heavy metals. This put very deleterious effect upon our body. It is a silent killer, because these harmful effects come after a long time of consuming this polluted food. Adulteration in edible products is also a common cause of food pollution. Food pollution is causing so many diseases related to different system of our body, like digestive system related, nervous system related etc. some serious health problems are developing day by day such as hormonal problems and various types of cancer. Water pollution and soil pollution are trigger factor or we could say enhancer for food pollution. Growing crops in polluted soil with polluted water is also responsible for polluting the food. Not only polluted soil or water, there are so many sources of food pollution. *Panchakarma* is the *ayurvedic* approach to get rid of these toxins and restores good health through detoxification of the human body. This article is related to polluted food, food adulteration, their adverse effects upon human body and its management through *Panchakarma* therapy.

Key words: Food Pollution, Fertilizer, Pesticides, Cancer, Adverse Effect, Panchakarma Therapy.

INTRODUCTION

Food is basic necessity of life. It provides people nutrients and energy they need to do work properly.

Address for correspondence:

Dr. Deepti Negi

Assistant Professor, Department of Agad Tantra Evum Vidhi Vaidyaka, Dev Bhoomi Medical College of Ayurveda & Hospital, Dehradun, Uttarakhand, India.

E-mail: dr.deeptinegi@gmail.com

Submission Date: 14/07/2021 Accepted Date: 18/08/2021

Access this article online

Quick Response Code



Website: www.jaims.in

Published by Maharshi Charaka Ayurveda Organization, Vijayapur, Karnataka (Regd) under the license CC-by-NC-SA

The importance of nutrition, as an integral part of the solution to many societal, environmental, and economic challenges facing the World, has just started to be fully valued. According to Ayurveda, the diet which nurtures both the mental and physical built is called balanced diet. Food is one among the three sub pillars (*Triya Upstambh*) - *Ahara*, *Nidra* and *Brahmacharya*, which support the body itself. Here *Ahara*, has been enumerated first, which shows its value.^[1] *Maharshi Susruta* has delineated the importance of food. According to him, Food nourishes and delights the heart & directly contributes to once bodily strength. It improves the memory, appetizing power, vitality, natural strength of the mind, increases the *Ojas* (immunity) the life span.^[2] Food pollution is now appropriate word for present time's admissible

stuffs. Adulteration of harmful substances in food and wrong agricultural business (use of various fertilizer and pesticides) are causing poisonous effect upon human health. Now a day food is not good enough for health because it contains so many things which have various harmful effects. Knowingly or unknowingly, we are taking those harmful substances by which human health is lowering day by day. Nutrition is vital, it affects the growth and development of humans and animals and also the prevention and treatment of disease. To remove its harmful effect and to rejuvenate the body, *Panchkarma* is very powerful therapy described in *Ayurveda*. *Panchakarma* is confirmed to help cleanse the body of impurities that can lead to disease.^[3]

Panchakarma is a combination of five procedures of purification - *Vamana* (Emesis), *Virechana* (Purgation), *Niroohavasti* (Decoction enema), *Nasya* (instillation of medicine through nostrils), and *Anuvasanavasti* (Oil enema).

Harmful chemicals present in food

Food is essential for living. As population increasing day by day the consumption of food is also increased. Except organic food all food materials contains so many harmful chemicals. In present time to increase taste or nutritional value of food there is adulteration of different synthetic materials which are affecting human health. Maximum foods produced for human consumption grown using organochlorine pesticides. These pesticides are substances having chemically combined chlorine and carbon. Almost all dairy animals exposed to these chemicals through their feed and after that result is contaminated milk.^[4] A report by the Center for Science in the Public interest, a consumer advocacy group, reveal that caramel coloring used in different popular cola soft drinks contains two chemicals called 2-methylimidazole and 4-methylimidazole that cause cancers of the lungs, liver and thyroid and leukemia.^[5] There are so many harmful food additives using by people in daily base. According to WHO "food additives are substances added to food to maintain or improve its safety, freshness, taste texture, or appearance. Most of the

people are not aware about these chemicals. These additives are preservatives, food colors, food flavors, flavor enhancers, high intensity / low-calorie sweeteners, antioxidants, emulsifiers, acidulants, anti-caking agents. Not only food additives but pesticides, insecticides, fertilizers and more other are also putting indirectly harmful impact on human body. Detergents are added in synthetic milk preparation to develop froth and their emulsification action. Many of the detergent contain dioxane which carcinogenic in nature and can cause cancer on consumption.^[6]

- **Food preservatives (chemical)** - In present time almost all food products have food preservatives. The intention is generally to preserve the natural characteristics of food and to increase the shelf life of food, increase microbial and chemical stability of foods or delay or even stop food rancidity.^[7,8] Sorbets/sorbic acid are added to foods as antimicrobial preservatives. Sodium benzoate, Benzoic acid, Sodium sorbate, Potassium sorbate, Sodium nitrite are used as Antimicrobial agents they inhibit the growth of bacteria, molds, insects and other microorganisms.^[9]
- **Food Colors** - Food dyes are chemical substances that were developed to enhance the appearance of food by giving it artificial color. The three most widely used food colors, Red 40, Yellow 5, and Yellow 6 are contaminated with known carcinogens.^[10] Sunset yellow (E110), mixed in Sweets, Snack foods, Ice-creams, Yoghurts and Drinks.
- **Food Flavors, Flavor Enhancers** - Flavors set up a good platform in food industry. Maximum food flavoring agents are produced by chemical synthesis and some are extracted from natural resources. However, latest market surveys have analyzed that consumers also prefer foodstuff that should be labelled "natural".^[11,12] 2,3-Butanedione (BD, diacetyl) is a naturally occurring a-diketone that gives butter its characteristic flavor and is an important constituent of artificial flavorings.

- **Pesticides and fertilizers** - Pesticides are substances used to prevent, destroy, repel or mitigate any pest ranging from insects, animals and weeds to microorganisms.^[13] Many workers and residents (farmers), particularly in the rural sector, are in contact with pesticides on a daily basis, so they are at high risk of poisoning by these compounds. Pesticides, or crop protection chemicals, consist of several groups of compounds, namely organochlorine, organophosphate, carbamate, pyrethroids, growth regulators, neonicotinoids, and now biopesticides, which have been developed one after the other.^[14]

Effects of these chemicals on Human Body

2, 3-Butanedione (BD, diacetyl) is a flavor enhancer caused respiratory toxicity.^[15] A report by "Food Dyes: A Rainbow of Risks" CSPI revealed that nine of the food colors presently approved for use in the United States are linked to health issues ranging from cancer and hyperactivity to allergy-like reactions, and these results were from studies conducted by the chemical industry itself. For instance, Red # 40, this is the most widely used dye, may accelerate the appearance of immune system tumors in mice, while also triggering hyperactivity in children. Blue # 2, used in candies, beverages, pet foods and more, was linked to brain tumors. Yellow 5, used in baked goods, candies, cereal and more, may not only be contaminated with numerous cancer-causing chemicals, but it's also linked to hyperactivity, hypersensitivity and other behavioral effects in children.^[16] Sunset yellow causes allergies & asthma. Cancer – DNA damage, increases tumors in animals, growth retardation and severe weight loss.^[17] Monosodium Glutamate, it is a flavor enhancer added to various foods, and also occurs naturally. Reactions to MSG have been called the "Chinese Restaurant Syndrome," and symptoms include numbness on the back of the neck, shoulders and arms, weakness and palpitations. Additional symptoms include facial pressure/tightness, headaches, nausea, chest pain and drowsiness.^[18] Uncontrolled use of pesticides, insecticide and biological toxins ingested by animals are very harmful

to human health because indirectly humans are also taking these pesticides and others. These chemicals as residues in the milk have significant public health importance, since dairy products are widely consumed by infants, children and many adults throughout the world.^[19] All these chemicals are very hazardous for health.

Management through Panchkarma

Ayurveda deals with the protective and curative aspects of health. *Panchakarma*, a specialty of *Kayachikitsa* (Internal Medicine) presents a exclusive approach of *Ayurveda* with specially designed five procedures (*Vamana* (Emesis), *Virechana* (Purgation), *Niroohavasti* (Decoction enema), *Nasya* (instillation of medicine through nostrils), and *Anuvasanavasti* (Oil enema) of internal purification of the body through the proper route.^[20] Low digestive fire (*Mandagni*) is the cause for all diseases. For correction of digestive fire (*Agni*), *Panchakarma* is the best treatment. *Panchkarma* is a good treatment procedure in different disease especially in diseases arising due to food pollution. In today's world more and more people are falling victim to the adverse effects of these chemical contained food, which is leading to diseases like improper digestion, heart diseases, diabetes, cancer, lack of sleep, allergies, chronic fatigue, osteoporosis etc. These diseases are produced mainly due to deep seated toxins which are accumulated through food pollution. *Panchakarma* eliminates these toxins from the body, allowing permanent healing of tissues and channels and thus normalizes digestion, and mental functions.^[21] A research shows that *Vasantic Vaman* and *Panchakarma* were very effective in the disorders of the skin, G.I. tract, Respiratory, and *Vata Vikara*.^[22] Bad food habits and fast food taking habits induced pathogenesis of various diseases such as; thyroid, obesity, diabetes, sleeplessness, migraine, depression, cardio vascular elements, high cholesterol, hypertension, stroke and anxiety.^[23,24] Foods additives, preservatives, pesticides and other chemicals affect ones digestive fire by which *Ama* produces. *Ama* is undigested, properly unprocessed consisting of dense, unctuous liquid, sticky, fibrous

material which has foul smelling & become reason of weakness, debility to body and many disease.^[25] This *Ama* passes in the blood stream and is circulated throughout the body, blocking the channels. Retention of toxins in the blood results in toxemia. This accumulated toxicity, once well established, will sluggishly affect vital life energy (*Prana*), and immunity resulting in disease.^[26] So *Panchakarma* therapy is best for correction of *Agni* (digestive fire). In a person of distressed homeostasis, there is impaired anabolism and catabolism resulting in the decreased nourishment and immunity impaired excretion of waste products leading to the collection of metabolic waste.^[27]

CONCLUSION

Presently, food pollution is a serious problem in world wide. Contaminations of food by these chemicals are causing toxicological effects slowly. Their carcinogenicity, hypersensitivity reactions, and behavioral effects and other toxicological considerations, food dyes cannot be considered safe. Natural preservatives are not harmful as comparison to synthetic chemicals used as preservative. Different chemical reagents have also been introduced as food additives and preservatives. However, there are growing concerns of using chemical additives and preservatives in food items because of possible health hazards. Agrochemicals as pesticides, fertilizers and herbicides are good for increasing the yield but are hazardous for human health. These have become the necessary evil of our diet so one cannot avoid their consumption but one can rejuvenate his/her body through *Panchkarma*. *Panchkarma* restore the body's natural balance while eliminating toxins and strengthening the immune system.

REFERENCES

1. Yadavji Trikamji (ed.). Charaka Samhita of Agnivesha, Ayurveda Deepika Commentary of Cakrapanidatta, Sutra Sthana, Tisraisaniya Adhyaya, Verse no. 35, Reprint edition, Chaukhamba Orientalia, Varanasi.2007:74
2. Kaviraja Ambikadutta Shastri, Ayurveda-tattva-sandipika hindi commentary, Sushruta. Sushruta Samhita part I, Chaukamba Sanskrit Sansthan, VNS, edition 2007 p. 109
3. Sharma H, Candela HM, Singh G, Bassist G. Utilization of Ayurveda in health care: an approach for prevention, health promotion, and treatment of disease. Part 2--Ayurveda in primary health care. J. Altern. Complement. Med. 2007;13(10):1135-1150
4. Martínez MP, Angulo R, Pozo R, Jodral M (1997) Organochlorine pesticides in pasteurized milk and associated health risks. See comment in PubMed Commons below Food Chem Toxicol 35: 621-624
5. Johnson PF. Toxic chemicals found in health foods, vitamins, and supplements. Epilepsy Talk 2015
6. <http://fdnmanager.com/laundry-detergentspose-serious-health-risks/>
7. PB Jean. Food Preservation. Nicolas Appert inventeur at humaniste, (1994), 2-908670-17-8 and http://www.appert_aina.com.
8. WHO Recommendations on antenatal care for a positive pregnancy experience. 2018.
9. Dr Sanjay Sharma, Food Preservatives and their harmful effects, International Journal of Scientific and Research Publications, Volume 5, Issue 4, April 2015, ISSN 2250-3153
10. Sunday N. Okafor. Assessment of the Health implications of Synthetic and Natural Food Colourants – A Critical Review, UK Journal of Pharmaceutical and Biosciences, Vol. 4(4), 01-11, 2016, ISSN: 2347-9442
11. Madene, M. Jacquot, J. Scher and S. Desobry, Int. J. Food Sci. Technol., 41, 1 (2006);
12. U. Krings and R.G. Berger, Appl. Microbiol. Biotechnol., 49, 1 (1998); <https://doi.org/10.1007/s002530051129>.
13. Grube, A., D. Donaldson, T. Kiely, and L. Wu. 2011. Pesticide Industry Sales and Usage. 2006 and 2007 Market Estimates. D.O.o.P.P. Biological and Economic Analysis, Office of Chemical Safety and Pollution Prevention, United States Environmental Protection Agency, Editor, Washington, DC.
14. Fernando P. Carvalho, Pesticides, environment, and food safety, Food and Energy Security 2017; 6(2): 48-60
15. Daniel L. Morgan, Chemical Reactivity and Respiratory Toxicity of the -Diketone Flavoring Agents: 2,3-Butanedione, 2,3-Pentanedione, and 2,3-Hexanedione, Toxicologic Pathology 2016, Vol. 44(5) 763-783.

16. Sunday N Okafor. Assessment of the Health implications of Synthetic and Natural Food Colourants – A Critical Review, UK Journal of Pharmaceutical and Biosciences, Vol. 4(4), 01-11, 2016, ISSN: 2347-9442
17. efsa.europa.eu -EFSA updates safety advice on six food colours 091112
18. Hamid A. Abdulmumeen, Food: Its preservatives, additives and applications, International Journal of Chemical and Biochemical Sciences, IJCBS, 1(2012):36-47.
19. Aytenfsu S, Mamo G, Kebede B (2016) Review on Chemical Residues in Milk and Their Public Health Concern in Ethiopia. J Nutr Food Sci 6: 524. doi:10.4172/2155-9600.1000524
20. Patil VC (2014) Principles & Practice of Panchakarma, (4th Ed.) reprint, Choukhambha Publications, New Delhi, pp. 716.
21. Patil VC (2013) Essentials of Practical Panchakarma Therapy. (1st Edn) reprint, Choukhambha Publications, New Delhi, p-158.
22. Mukesh Rawal, Effect of Vasantic Vaman and other Panchakarma procedures on disorders of various systems, Ayu. 2010 Jul-Sep; 31(3): 319–324. doi: 10.4103/0974-8520.77160 PMID: 22131733
23. Gautam J. Bhaisare, Hemraj Meena, C. R. Yadav, Depression and its Ayurvedic Management, International Journal of Ayurvedic & Herbal Medicine, 2012; 2(4): 602-606.
24. Astanga Hridaya with the commentaries, Sarvangasundara of Arundutta and Ayurveda rasayana of Hemadri; Uttarsthana 23/24-26; Reprint edition, V.S. 2066 Published by Choukhambha Samskrit series, Varanasi.
25. Ganesh Krushana Garde, (12th Ed), Sartha vagbhat, Vagbhtakryta Ashtangrudhaya and its Marathi translation, Sutrastan; Matrashitiya-Adhya; Chapter 8. Verse 13; Pune: Proficient Publishing House, 2009; page no. 48.
26. Vasant Lad (1994) An Introduction to Panchakarma, Ayurveda Today, Volume VII, Number 1, Summer 1994, Ayurvedic Institute.
27. Patil VC and Minhas D. Panchakarma - A Scientific and Evidence Based Specialty Therapy of Ayurveda. Alt Med Chiropractic OA J 2019, 2(1): 180011.

How to cite this article: Deepti Negi, Rashmi Joshi, Kanchan Thakur, Anupama Kumari. Effects of Food Pollution on Human Health and Its management through Panchakarma. J Ayurveda Integr Med Sci 2021;4:149-153.

Source of Support: Nil, **Conflict of Interest:** None declared.
