



Prevention of Current Infectious Diseases in Children Through Ayurveda

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ABSTRACT

Infectious diseases are the illness resulting from an infection which is caused by various agents like bacteria, virus, fungal and protozoal origins. It occurs as diarrhoeal diseases, pneumonia and other infectious diseases of various systems like skin etc. and these infectious diseases are many times the leading cause of death. Out 58% of all death about 18% of death was due to diarrheal disease, 10% due to pneumonia, 10% CNS infections, 4% measles & 12% due to other infectious disease. Children are more prone to develop infectious disease because of lack of personal hygiene, immature immune system and immature physical development. Children are Sukumara, Dosha-Dushya-Mala alpata, Akleshasaha, Sarvaannaupsevata, aniyata agni etc which further aids for the disease to manifest. The present managements are focused on improving social and personal hygiene, isolation, vaccinations and in some specific medicines. Even with such advancement in treatment the incidence of emerging infectious diseases has increased within recent past or threatens to increase in near future. In the recent past India has seen outbreaks of eight organisms of emerging and re-emerging diseases in various parts of the country. Added to that as cited by WHO, the development of antibiotic resistance is now a serious worldwide problem caused primarily by the misuse or overuse of antibiotics. Antimicrobial resistance global report on surveillance notes that resistance occurring across many different infectious agents such as Klebsiella pneumonia for Carbapenem, E. Coli in UTI Fluoroquinolones, Gonorrhoea third generation Cephalosporin, Staphylococcus aureus methicillin resistance (MRSA). So we must broaden our views of how to prevent and treat microbial infections by Ayurveda. Ayurveda focusing on preventive aspect and curative aspect, if fairly used can be used for increasing vydhikshmatwa. While the urjaskara chikitsa (swarna prasana and other rasayanas) prakaradi yogas, samskaras, sadvrta palana etc would work on the preventive aspects, individual samprapti vighatana chikitsa specific to diseases will work on curative aspects and Ayurveda might altogether with proper integration with allopathy will prove to be beneficial in preventing the incidence of infectious diseases and to decrease the burden of antibiotic resistance.

Keywords: Infectious diseases, Prakaradi yoga, Immunomodulators

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INTRODUCTION

The healthcare system around the world has been posed with an unprecedented challenge by the pandemic Covid 19. Vaccinations provide protection against specific infections. In the present time scientific world is struggling to tackle the spreading nature of infection and vaccination become anarchic due to the invariable mutation of microbes. In the absence of known medicines and vaccines for this condition, the whole world is looking for preventive strategies and additional remedies from different traditional systems of medicines including Ayurveda. A number of research findings are also pouring in from all sides to improve the immunity from the attack of this virus. The need of the hour is to protect ourselves from these deadly diseases. At this juncture arises the need for a well-built generalized immunity that will protect against a number of infections irrespective of the causative organism. Ayurveda is a traditional system of medicine originated in the ancient Vedic times of India. It is a comprehensive approach to health and homeostasis that addresses body, mind, emotions, spirit, and environment. It has emphasized on personal hygiene, social hygiene and environmental hygiene. One of the oldest treatises of Ayurveda, *Arogya Raksha Kalapadrumah* explains certain measures called as *Prakaradi Yogas* to develop immunity in children. Here is an attempt to decode some of the practices mentioned in *Arogya Raksha Kalpadruma* to develop immunity towards different infectious diseases.

The word Immunity is derived from the Latin word 'Immunis' meaning 'exempt'[1] and the term is concerned with the state of being resistant or immune to foreign substances such as bacteria and other pathologic agents. There are two interconnected systems of immunity - innate immunity and adaptive immunity. These two systems work together in protecting the body against foreign invaders. Innate immunity is primitive, nonspecific and has no memory and provides the first line of defence against infections. Cellular components of innate immunity consist of polymorphonuclear leukocytes, macrophages and natural killer cells. These ingest extracellular material by phagocytosis. The second form is Adaptive immunity, is highly evolved, specific has memory and is characterised by rapid immune response when exposed to the same microorganisms. Adaptive immune responses develop through synergy between lymphocytes and antigen presenting cells following specific antigenic challenge, show tremendous diversity and exhibit immunological memory. The components of adaptive immune system are lymphocytes, macrophages and antigen- presenting cells[2].

The adaptive immune response occurs within 5- 6 days after the initial exposure of pathogens and barrier breach, and this is followed by a gradual resolution of the infection.

In Ayurveda, the concept of Immunity is explained under *Vyadhikshamatwa*. It is defined as the ability of the body to counteract the strength of disease and prevent the body from falling ill. This concept having a broader perspective depends on various factors as follows.

Agni - The role of *Agni* (digestive fire) in preventing diseases can be understood from the Sloka "*Roga Sarve Api Mande Agnou*". *Agni* is considered as the prime cause of all diseases. *SamaAvastha* of *agni* bestows good health. The *Agni* become in *Vishama* (unstable), *Teekshna* (aggravated) and *Manda* (mild) *avastha*, when vitiated by *Vata*, *Pitta* and *Kapha* respectively [3]. These vitiated *Agni* results in ill health. *Agni* can be kept in equilibrium by appropriate observance of *Dinacharya* (daily regimes), *Ritucharya*(seasonal regimes), timely *Sodhana* (purificatory) therapies etc.

Ojas - It is considered as the essence of *Sapta Dhatus* [4] and seat of *Prana* (life) and its *Abhava*(absence) leads to deterioration of health. [5] The quality of *Ojas* is determined by the quality of *Ahara* (food) ingested, strength of *Agni* and mental health of the person. The quality of *Ojas* is negatively affected by trauma, emaciation, and emotional disturbances, excessive thinking, over exertion and fasting. [6]

Balam - *Balam* (Strength to fight against diseases) is the end result of *Ojas*. [7] "*Baladhishtanam Arogyam*". There are three types of *Bala*, *Sahaja* (Innate immunity), *Kalaja* (Immunity acquired as age advances, attained during different phases of day and seasons. *Yuktikrita* (acquired through *Ahara Oushadha Seva*) [8]. Status of *Bala* is determined by the *Balavrudhikara Bhavas*, [9] which are as follows;

- Birth to parents whose immunity is strong.
- Birth in a place where people are strong by birth.
- Birth in a time when people naturally gain strength.
- Favourable disposition of time
- Excellent qualities of *Sukra* and *Sonita* (male and female gametes)
- Excellent qualities of ingested food

Vyapat, *Visrams* and *Kshaya* denote the deranged states of *Ojas* and *Bala* [10] and it can be understood from the specific features as explained by *Sushruta*.

CONCEPT OF IMMUNITY IN CHILDREN

More than 1600 genes are involved in innate and adaptive immunity. These genes are of great importance for sustaining life in a hostile environment. Yet the immune system is relatively immature at birth and has to evolve during a life of exposure to multiple foreign challenges through childhood, via young and mature adulthood.

The innate immune system provides an early first line of defence against invading pathogens. The cells involved are neutrophils, monocyte, macrophages and dendritic cells, which all adapt with the interact with the adaptive immune system. These cells develop and mature during fetal life, but at different times, and the function of all innate immunity is weak in newborns compared with the adults [11].

Mature neutrophils are present at the end of the first trimester but they show weak bactericidal function, poor response to inflammatory stimuli, reduced adhesion to endothelial cells and diminished chemotaxis [12]. The deficit are more striking in preterm infants, which also have lower IgG and complement. The newborn especially the preterm infants have impaired neutrophil function [13], putting the child at the risk of bacterial infection.

Overall, the innate immune system is muted at birth, a price probably paid by the fetus not only to tolerate non-shared maternal antigens but also to ignore the considerable amount of stress and remodelling that takes place during development. This makes the newborn, and particularly the premature baby, relatively susceptible to bacterial and viral infections.

Ayurveda explains *balavastha* as the first phase of life, where the body is immature in terms of physical, psychological and sexual development. The child is at the stage of:

Aparipakvadhātu (immaturity of tissues)

Ajatavyanjanam (secondary sexual characters are not developed)

Akleshasaham (Intolerate to harsh situations)

Sukumaram (Highly vulnerable)

Asampuranabalam (incomplete strengths)

Anavasthasatwam (instability of the mental state) [14]

Due to the immaturity of the body tissues, reduced immunity, elevated number of inflammatory mediators and vulnerability of the extraneous factors like environmental changes, the child is more prone to infectious diseases. The risk are however reduced by the use of immunomodulatory drugs and through vaccination. Immunomodulators are biological or synthetic substances that stimulates or suppress the components of immune system including both innate and adaptive responses in a beneficial way [15]. Improving the generalised immunity against a wide range of infections and disease condition is the need of the hour in protecting the infants especially, as the world is witnessing the surge of infections due the mutation of microbes.

PRAKARADI YOGAS – A UNIQUE CONTRIBUTION FROM AROGYARAKSHA KALPADRUMA

Prakaradi yogas are the age specific formulations mentioned in *Arogyarakshakalpadruma*, a renowned book of ayurveda clinical paediatrics, written by VaidyaKaikullangara Rama Varrier in simple Sanskrit and widely followed in South India and it is unique in many aspects. It is a practically oriented text book and explains many simple and easy to use *Yogas* and *Kalpanas*. The unique formulations of *Prakaradiyoga* are explained systematically in 42nd chapter of *Arogyarakshakalpadruma*. These are found to be useful information with excellent efficacy and prevent disease.

“Prakara Iva Satrubhyo Ye Rakshanti Vapuh Sisoh

Prakarayoga Taanaahu staaan Braveemi Prithagvidhaan” [16]

It is explained that just like a wall or fort that protect the house from the attack of enemies, *Prakarayogas* keep the child away from various ailments. These formulations provide generalized immunity to the child as well as helps to compensate the physiological immaturity of the immune system in pediatric age. They should be given as a schedule at different age groups from *Jatamatra* to *Dvadasabdha* (completed 12 years of age), Most of the combinations are in the form of *Choorna* (powder) and *Ghrita* (Medicated Ghee). Components of each formulation vary with corresponding age group and must be used along with appropriate *Anupana*. The prescribed use of *Prakara yogas* correct *Agni* and alleviate dosha *dushti* as they are collectively having pharmacological actions such as *Deepana* and *Pachana* [16]. There are different modes of administration of drugs in different age group like local application of drugs in different age groups like local application over *Murdhni* (anterior fontanelle) and oral intake in prescribed dosage. Following the appropriate dietary, daily and seasonal regimens are advised along along with the *Prakara* schedule [16]. These *Yogas* have been chosen to counter the *DoshaVaishamya* expected at specific ages [16].

FORMULATIONS AT INFANCY PERIOD [16]

Age group	Drug Formulation	Mode of administration	Anupana	Duration	Time
<i>Jatamatra</i> (New born)	<i>Vacha</i> mixed with <i>Tripadika Rasa</i>	External application as <i>Thalam</i> – 3 drops	-	7 Days	Morning
<i>Pakshateeta</i> (Complete 15 days)	<i>Vilwa panchanga Churna</i>	Oral	<i>Dhatri Swarasa</i>	7 days	Morning
<i>Masajata</i> (Completed 1 month)	<i>Musta Hingu Vidanga Churna</i>	Oral	<i>Trayanti Sarpi</i>	7 days	Morning
<i>Trimasika</i> (Completed 3 months)	<i>Vyosha Sariba Churna</i>	Oral	<i>Navaneta</i>	7 days	Morning
<i>Shanmasika</i> (Completed 6 months)	<i>Musali Khanda Vyosha churna</i>	Oral	<i>Madhu</i>	7 days	Morning

1 YEAR OLD CHILD [16]

Age group	Drug formulation	Mode of administration	Anupana	Duration	Time of administration
1 year 1 month	<i>Dhatri musta Vyosha churna</i>	Oral	<i>Madhu</i>	7 days	Morning
1 year 2 month	"	Oral	Butter	7 days	Morning
1 year 3 month	"	Oral	Hot water		
1 year 4 month	"	Oral	Honey		
1 year 5 month	Same drugs added with <i>Panchakola</i>	Oral	Ghee	7 days	Morning
1 year 6 month	<i>Jiraka & Pippali</i>	Oral	Honey	7 days	Morning
1 year 7 month	<i>Dadima & Vyosha</i>	Oral	<i>Dadhimastu</i>	7 days	Morning
1 year 8 month	<i>Gandhika mula & Kalinga</i>	Oral	Ghee	7 days	Morning
1 year 9 month	<i>Vella & Krishna</i>	Oral	Honey	7 days	Morning
1 year 10 month	<i>Jiraka & Vyosha</i>	Oral	Sugar	7 days	Morning
1 year 11 month	<i>Jiraka & Vyosha</i>	Oral	Cows milk	7 days	Morning
1 year 12 month	<i>Sugar & Jiraka</i>	Oral	Cows milk	7 days	Morning

3 YEAR OLD CHILD [16]

Age group	Drug formulation	Mode of administration	Anupana	Duration	Time of Administration
3 year 1 month	<i>Guduchi Pippali Vacha</i>	Oral	Ghee & Sugar	7 days	Morning
3 year 2 month	<i>Vyosha Yashti Vacha Saindava Abhaya</i>	Oral	Ghee & Sugar	7 days	Morning
3 year 3 month	<i>Vella Musta Ela Vaca Nagara & Pippali</i>	Oral	Ghee & Sugar	7 days	Morning
3 year 4 month	<i>Sariba Vyosha Vaca Jiraka Kaisiki Churna</i>	Oral	Ghee & Sugar	7 days	Morning
3 year 5 month	<i>Dadima Ambhoda Vaca Dhanyaka & Magadhi</i>	Oral	Ghee & Sugar	7 days	Morning
3 year 6 month	<i>Vrusciva bhunimba vaca Kshirataru twak</i>	Oral	Ghee & Sugar	7 days	Morning
3 year 7 month	<i>Supyaparni Abda Vira Rudhi capala vaca</i>	Oral	Ghee & Sugar	7 days	Morning
3 year 8 month	<i>Drona pushpa Abda Vaca Dwija taru twak</i>	Oral	Ghee & Sugar	7 days	Morning
3 year 9 month	<i>Trayamana Abda Vaca Kutaja Magadhi</i>	Oral	Ghee & Sugar	7 days	Morning
3 year 10 month	<i>Malati pushpa Vaca Jiraka Kaisiki</i>	Oral	Ghee & Sugar	7 days	Morning
3 year 11 month	<i>Samipatra Jiraka Chitraka Vaca Pippali</i>	Oral	Ghee & Sugar	7 days	Morning
3 year 12 month	<i>Vella, Talisa patra Agni, Abhaya Vacha</i>	Oral	Ghee & Sugar	7 days	Morning

5 YEAR OLD CHILD [16]

The child of 5 year old is given with the same medicaments of the 3rd year with *Pushkaramula* instead of *Vaca*

6 YEAR OLD CHILD [16]

The child of 6 year old is given with the medicaments said for *Traibda* added with root of *Sankhapushpa* instead of *Vaca* and the medium for mixing the compound is ghee and honey instead of sugar and ghee.

10 YEAR OLD CHILD [16]

After 10th year, the boy is given with proper medicated ghee monthly for seven days is beneficial. They are

Age group	Drug Formulation	Mode of Administration	Anupana	Duration
10 year 1 month	<i>Brahmi swarasa, Abhaya, Vyosha, Saindava, vaca & Talisa patra</i>	Oral	-	7 days
10 year 2 month	<i>Vilanga, Amalaka, Vyosha, Patha, Dadima & Dipyaka</i>	Oral	Juice of <i>Krishna munda</i>	7 days
10 year 3 month	<i>Jiraka Vyosha, Saindava, Vaca, Jalada, Pushkara</i>	Oral	Juice of <i>Vetasaml a</i>	7 days
10 year 4 month	<i>Jivaniya gana, Ambhoda, Jayanthimoola Chitraka Granthi</i>	Oral	<i>Aja Dugdha</i>	7 days
10 year 5 month	<i>Draksha, Vrusciva, Patha, Abda, Habusha mula, Katphala, Dadima</i>	Oral	<i>Aja Dugdha</i>	7 days
10 year 6 month	<i>Sariba, Jalada, Usira, Trikatu, Surahwaya, Jiraka</i>	Oral	<i>Aja Dugdha</i>	7 days
10 year 7 month	<i>Nagara, Amalaka, Anantha, Vidanga Indrayava, Ambuda, Bilva</i>	Oral	<i>Aja Dugdha</i>	7 days
10 year 8 month	<i>Pippali, Indrayava, Draksha Bruhati, Amsumati dwaya Guduchi Ambu, Nalada, Chotraka, Dadima, Patha, Ambhoda, Ugra, Shigru, Hingu, Punarnava, Bilwamoola, Malati, Utpala, Vidanga, Amalaki.</i>	Oral	<i>Mastu Sugar & Jeeraka</i>	7 days
10 year 9 month	<i>Bilva, Ajamoda, Nirgundi, Capalamoola, toyada, Dadima. Kalka – Vyosha, Ela, Agni, & Vilanga</i>	Oral	<i>Go Ksheema</i>	7 days
10 year 10 month	<i>Trayamana, kalinga, Abda, Capalamula- decoction, Kalka of Ativisha, Musta, Bhoonimba & Kutaja</i>	Oral	<i>Mastu</i>	7 days
10 year 11 month	<i>Dadima, Triphala, Vella, Magadhi mula & Chitraka</i>	Oral	<i>Jivanti & Mastu swarasa</i>	7 days
10 year 12 month	<i>Patha, Bhunimba, Kutaja, Varshabhu, Dhanyaka – decoction, Kalka- Vella, Palasa twak, Nisa dwaya, Punarnava, Vyosha, Dipyaka, Ananta & Madhuka</i>	Oral	<i>Madhu</i>	7 days

12 YEAR OLD CHILD [17]

1st month : *Vacha Anantha, Madhu* and *Sarkara* for 7 days

2nd month : *Brahmi, Anantha, Shamivalka, Munda, Magadhi, Amalaki, Vishala, Vajravalli, Bhunimba, Indurekha* and *Gopika* are to be given from second month onwards to 12th month for 7 days in consecutive order.

DISCUSSION

Bala avastha is *Kapha* predominant with unstable *Agni*. Due to the peculiarity of dietary habits with excessive consumption of *Ghrta* and *Ksheera*, the chances of *Kapha* vitiation is more during this period. Stability of *Agni* is needed for the balanced state of *Tridosha*, *Dhatu* and *Mala*, the equilibrium of which represents *Swasthya*. Moreover, the immature immune system, *Aparipakwata* of *Dathu* and *Asampoornabala* of *balya* makes the child prone to disease mainly of *Kapha* origin. As per Ayurveda principles, the pharmacological action of drug is determined by its *Rasa*, *Guna*, *Virya*, *Vipaka* and *Prabhava*. During the labour the *Prasuti Klesha*, (Stress during Labour) may affect the baby by vitiating *Vata* and *Rakta*. Application of *Vacha churna* with *Tripadika Swarasaas thala* (keep the drug over anterior fontanelle) in *Jatamatra* helps in balancing the doshas and prevents *Raktaprakopa*. It also stimulates the nervous system by acting on brain with the help of absorption as it is *Uragandhi*. It is having the high penetration by its *Gandha*. Many drugs used in *Prakaradi yoga* comprises of predominantly *Kadu Tikta Rasa*, *Katu Vipaka* and *Laghu Guna* which help in alleviating *Kapha* dosha and also promotes metabolism by its *Deepana* and *Pachana karma*. The formulations, by virtue of its *Srotho Shodhana* property helps in proper assimilation of nutrients and thus ensures optimum growth and development. Drugs with *Rasayana* property included in the formulation helps in the formation of high quality *Dhatu*s.

Several pharmacological studies have been conducted in many of the ingredients like *Pippali* [18], *Sunti* [19], *Sariba* [20], *Musali* [21] etc and are proven to have immunomodulatory actions. *Hingu* contain a chemical constituent *Lutcolin*, which is having Anti- polioviral activity and antibacterial activity [21]. Many of the drugs have actions like *Krimighna*, *Jwaraghna*, *Hridya*, *Ruchya*, *Balya*, *Anulomana*, *Vishaghna* etc,

which helps in preventing various childhood illness. Antibacterial, Antifungal, Antiviral, Anti-inflammatory, Antioxidant properties of these drugs helps in preventive aspect. So far several clinical trial have been conducted on *Prakaradi yoga* in children of different age group and their efficacy have been proved. These *yogas* given at specific intervals for a specified duration helps in maintaining the wellbeing of the child by supporting metabolism, growth and development without giving a chance to vitiate *Agni*.

CONCLUSION

Preventive aspect of health care system has been receiving great importance due to threat of new disease outbreaks and unpredictable spontaneous mutation of various pathogens. Ayurveda understands the delicate balance of nature and deals with diseases by taking a natural and balanced approach. *Prakaradi yoga* is a sole concept in Ayurveda in which immunomodulatory drug combinations are given in an age wise schedule, right from birth. These formulations strengthen the body's innate defence mechanism to fight against infectious diseases, as a result the disease causing microbes do not become drug resistant and also safe for the gut microbiota and does not damage it. In Addition to these obvious benefits, Ayurveda treatment act on the root cause rather than symptoms and it is safe effective and does not create Antibiotic resistance.

REFERENCES

1. Judith A. Owen et al, Kuby Immunology, W.H. Freeman and Company, Newyork, 7th Edition, 2013, Chapter 1, page 2.
2. Vinod K Paul, Arvind Bagga, Ghai Essential Pediatrics, CBS Publishers & Distributors Pvt Ltd, 9th Edition 2019, Chapter 10, Page 178.
3. Vagbhata, Ashtanga Hridayam, Commentary by P M Govindan Vaidyan, Sutrasthana, Chapter 1, Sloka 8
4. Vagbhata, Ashtanga Hridayam, Chaukhamba Sanskrit series, Reprint 2008, Sutrasthana Chapter 12, Sloka 37, Page No 84.
5. niimh.nic.in/ebooks/esushruta, Sushruta, Sushruta Samhita, Sutrasthana Chapter 15, Sloka 21,22
6. niimh.nic.in/ebooks/esushruta Susruta, Susruta Samhita Sutrasthana, Chapter 15 Sloka 23.
7. niimh.nic.in/ebooks/esushruta Susruta, Susruta Samhita, Sutrasthana, Chapter 15, Sloka 19.
8. niimh.nic.in/ebooks/ecaraka, Charaka, Charaka Samhita, Sutrasthana Chapter 11, Sloka 36.
9. niimh.nic.in/ebooks/ecaraka, Charaka, Charaka Samhita, Sarirasthanam, Chapter 6, Sloka 13.
10. niimh.nic.in/ebooks/esushruta, Sushruta, Sushruta Samhita, Sutrasthanam, Chapter 15, Sloka 24
11. Abbas, A. R., Baldwin, D., Ma, Y., Ouyang, W., Gurney, A., Martin, F., ... & Clark, H. F. (2005). Immune response in silico (IRIS): immune-specific genes identified from a compendium of microarray expression data. *Genes & Immunity*, 6(4), 319-331.
12. Nussbaum, C., Gloning, A., Pruenster, M., Frommhold, D., Bierschenk, S., Genzel-Boroviczeny, O., & Sperandio, M. (2013). Neutrophil and endothelial adhesive function during human fetal ontogeny. *Journal of leukocyte biology*, 93(2), 175-184.
13. Filias, A., Theodorou, G. L., Mouzopoulou, S., Varvarigou, A. A., Mantagos, S., & Karakantza, M. (2011). Phagocytic ability of neutrophils and monocytes in neonates. *BMC pediatrics*, 11(1), 1-6.
14. Niimh.nic.in/ebooks/ecaraka, Charaka, Charaka Samhita, Vimanasthana, Chapter 8, Sloka 122.
15. mometrix.com/academy/immunomodulators-and-immunosuppressive-agents.
16. Kaikulangara Ramavarier, Arogyaraksha kalpadruma, Chowkhamba Sanskrit series, 8th Publication, Edition 2, 2012, Chapter 42
17. Satyapal Singh et al, (2015). Clinical Appraisal of Immunomodulators In Ayurveda in The Light Of Recent Pharmacological advances, World Journal of Pharmaceutical Research, Vol 4, Issue 4, 678-692.
18. Hua-li Zhou et al, (2006). The modulatory effects of the volatile oil of ginger on the cellular immune response in vitro and in vivo in mice, Journal of Ethnopharmacology, 21. 10-15
19. Kainthla, R. P., Kashyap, R. S., Deopujari, J. Y., Purohit, H. J., Taori, G. M., & Dagainawala, H. F. (2006). Effect of *Hemidesmus indicus* (Anantmool) extract on IgG production and adenosine deaminase activity of human lymphocytes in vitro. *Indian journal of pharmacology*, 38(3), 190.
20. Rathod, D. B., Suman, L., Yadav, G. K., & Shah, M. B. (2010). Immunomodulatory and antioxidant activity of *Curculigo orchioides* Gaertn. *International Journal of PharmTech Research*, 2(2), 1197-1203.
21. J L N Sastry, K C Chuneekar, (2017). Dravyaguna Vijnana, Chaukhamba Orientalia, 1st Edition, Page 254.

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