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Role of ayurvedic immunomodulator in children`s growth and development

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Abstract
Immune system is the cornerstone of good health. Immunity is the balanced state of having adequate biological defence system. Immunomodulation is a very broad term which refers to any changes in the immune response and may involve induction expression and amlification in the immune response. Immunomodulation can be classified into the following three categories: immunoadjuvants, immunostimulants and immunosuppressants. A number of Indian medicinal plants and various rasayana have immunomodulatory activity. In Ayurveda it is defined as *Vyadhikshamatva*. In children it is improved by *Lehan* karma by various herbominral formulations. The use of Ayurvedic immunomodulator improves the overall children's growth by decreasing morbidity.

Keywords: Rasayana, Vyadhikshamatva, immunomodulator, Lehan, Oja

Introduction
Every parent is desirous of longevity and healthy life of child. Health is the level of functional or metabolic efficiency of a living organism. In humans it is the ability of individuals or communities to adapt and self manage when facing physical, mental or social challenges. [1] According to WHO health is a state of complete physical, mental and social well being and not merely absence of disease or infirmity. Health is also defined as balanced condition of the living organism in which the integral, harmonious performance of the vital functions tends to the preservation of the organism and the normal development of the individual. A strong well functioning immune system is the cornerstone of good health. Immunity is the balanced state of having adequate biological defences to fight infection, disease, or the unwanted biological invasion while having tolerance to avoid allergy and autoimmune diseases [2].

Growth and development
Growth is a measure of physical maturation, signifies an increase in the size of the body and its various organs. Growth is mainly due to multiplication of cells and an increase in intracellular substances.
Development is a measure of functional or physiological maturation and myelination of the nervous system. It signifies accomplishment of mental, emotional and social abilities [3].
Nutrition plays a crucial role in the establishment and maintenance of healthy immune system. Protein calorie malnutrition deficiency of micronutrients robs the body of its defensive capabilities depleting white blood cells as well as crucial immune system proteins.

Immunomodulation
The concept of immunomodulation has been gaining much significance worldwide as people started realizing the indispensible role of the immune system in maintaining a disease free state. In the last two decades, to further complicate matters, there has been an upsurge in the number of strains of infectious agents that no longer succumb to antibiotics has been observed. [4] It is apparently clear that antibiotics have lost their magic touch after dacades of incautious prescription, improper use and inevitable spread of bacterial genes that confer drug resistance. The control of disease by immunologic means has two objectives: The development of immunity and prevention of undesired immune reactions.
In clinical perspective immunomodulators can be classified into three categories:

Immunoadjuvants
An adjuvant is an agent that stimulates the immune system increasing the response to a

vaccine while not having any specific antigen. Adjuvants perform one or more of three main functions [5-6].

- They provide a depot for the slow release of antigen.
- Facilitate targeting of the antigen to immune cells and enhance phagocytosis,
- Modulate and enhance the type of immune response induced by the antigen alone.

Immunostimulants

These agents are envisaged to enhance body's resistance against infections, can act through both the innate and adaptive arms of the immune response. In healthy individuals, the immunostimulants are expected to serve as prophylactic agents such as immune potentiators by enhancing the basic level of immune response and in individuals with immunocompromized condetions and immunotherapeutic agent [7].

Immunosuppresants

These agents could be used for control of pathological immune response in autoimmune disease, graft rejection, graft versus host disease, hypersensitivity and immune pathology associated with infection [8].

Ayurvedic concept of immunomodulators

Immunomodulators are considered now as one of the most potent tools in the management of health and disease by modern medicine. The basic concept of immunomodulation not only existed in Ayurveda but is being really practiced by the Ayurvedists for centuries. In Ayurvedic practice the objective of immune enhancement is achieved through the use of the Rasayana, Lehan and Ojovardhaka remedies.

Vyadhikshamatwa has much wider implications than the term immunity. Ckakrapanidatta has interpreted the term Vyadhikshamatwa as *Vyadhibala virodhitwa* i.e. antagonistic to the strength and virulence of the disease and *Vyadhyutpada pratibandhakatwa* i.e. the capacity to inhibit and bind the cause and factor of disease. Charak has also described Bala as the factor that destroyes the Dosas or disease causing factors viz; *Balam hyalam dosaharam nigrahaya dosanam.* The Bala is used as synonyms to Prana and Ojas. They have underlying meaning of biostrength and vitally with natural resistance against disease.

Ojas has the property similar to sleshma but in the Ayurvedic text it is stated to stand not only for sleshma but also for Rasa and Rakta. The Ojas prevents, resists and overcomes such factors which are produced in the course of the vital activities of the organism and may lead to decay degeneration of the tissues (Dhatu) of the body [9-12].

Rasayana

Apparently Rasayana means an improved state of nourishment which inturn upholds increased immunity and youthfulness. Rasayana can be a drug, diet or even a life style and conduct. The Rasayana are supposed to strengthen Oja and Bala i.e. biostength with natural resistance against aging and disease. It is stated to contribute to the integrity of body tissues and thus increases longevity. The other benefits of this therapy are the promotion of memmory and intelligence, the preservation of youth, luster, complexion and voice.

Rasayana measures act by one of the following three ways-

Acting at the level of rasa: Thus directly improving the quality of nutrition.

Acting at the level of agni: i.e by improving the digestion and metabolism of the body and there by affording better nutrition.

Acting on the level of srotas: i.e. by improving the microcirculation, it ensures proper perfusion and nourishment of the tissues which provides body immunity against degeneration and disease [9-12].

Materials and Methods

This study was done by compiling the original research work, classical Ayurvedic litrature, magezines and research journals as well as Pubmed, Medline database were used for the search of relevant literature and research paper.

Results

Reveiw of studies reveal that Ayurvedic drugs have potent immunomodulator properties which promote over all growth of children.

Discussion

Ayurveda describes a number of drug as rasayana and ojovardhak which are claimed to posses immunomodulatory effect. Some of the rasayanas which have possess immunomodulatory effect are Aswagandha (*Withania somnifera*), Amalki (*Emblica officinalis*), Tulsi (*Ocimum sanctum*), Guduchi (*Tinospora cardifolia)*, Pippali (*Piper longum*), Punarnava (*Boerhavia diffusa*), Yashtimadhu (*Glycyrrhiza glabra*), Brahmi (*Bacopa monnieri*), Bhringraj (*Eclipta alba*), Gold, of which Guduchi, Tulsi and Brahmi have been extensively studies. Bhringraj have free oxygen radical scavenger mechanism. The active principles of Guduchi have been found to possess anticomplementery and immunostimulating activities. [14] Yashtimadhu (*Glycyrrhiza glabra)* another important Rasayana drug has been found to be immunostimulating which accelerates lymphocytic transformation activation of macrophage and increases the leucocyte count. It also have anti-allergic, anti-inflammatory and antioxident activity. [15] A controlled clinical study with combination of the Rasayana drugs- Amalki, Vidang and Atibala have shown an increase in immunoglobulin levels in infants which is significant greater than that of multivitamin used cases. [16] A combination of four important Rasayana drugs – Guduchi, Ashwagandha, Amalki and Tulsi in equal amounts was found to potentiate both the cellular and humoral components of immunity [17-18].

Conclusion

Ayrvedic drugs potentiate the immune system (Vyadhikshamatva), decreases the morbidity and improves the growth and development of children.

To conclude, Ayurvedic immunomodulator are effective growth and development enhancer and considered now as one of the most potent tools in the management of health and disease.

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