Indigenous Herbal immune enhancers and its traditional Use in therapy including alternative medicine: A Review

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Abstract
A herbal immunomodulator is a substance which stimulates or suppresses the components of immune system including both innate and adaptive immune responses (Agarwal and Singh 1969). The modulation of immune system by various medicinal plant products has become a subject for scientific investigations currently worldwide.

Key words: Herbal immunomodulator, Medicinal plants

Introduction
Under Indian scenario, poultry industry has become a means for earning livelihood for the economically distressed farmers in India due to its promising results in productivity and National economy. Poultry rearing is currently the fastest growing industry in our National livestock sector which is benefiting us from production and advantages in prices along with provision of proteinacious food. Many herbal plant preparations are prescribed to strengthen host resistance (Thatte and Dahanukar 1986). Many useful plants fall under this category. They exhibit immunomodulatory activities.

Mode of action in immunostimulation of different herbal extracts
One such plant, Tinospora cordifolia, commonly called ‘Guduchi’ has been examined for its immunomodulatory properties. Guduchi means to rejuvenate dead cells. It is widely used in veterinary folk medicine and has also been claimed to be beneficial according to ‘Ayurveda’ for the cure of jaundice, skin diseases, diabetes, anemia, emaciations and various infections for its anti-spasmodic, anti-inflammatory, anti-arthritic and anti-allergic properties (Chopra et al. 1982). It has also been reported that it improves the phagocytic and bactericidal activities in patients suffering from polymorphism in surgical jaundice (Thatte at al. 1989). Kolte et al. (2007) studied the effect of feeding T. cordifolia in broiler birds which were immunosuppressed with cyclophosphamide. They had found a significant rise in antibody titer against ND virus with augmentation of inflammatory reaction to skin contact sensitivity test. Rege et al. (1989) and Bishavi et al. (2002) have proved the hepato-protective effect of T. cordifolia. Manjrekar et al. (1999) also found that aqueous extract of T. cordifolia is capable of increasing leukocyte count in mice.

Withania somnifera also fall in this category with many other useful plants. They exhibit immunomodulatory activities. Withania somnifera (commonly called ‘Ashwagandha’) root extracts possess anti-estrogenic, adaptogenic, anti-cancer and anabolic activities having beneficial effects in the treatment of arthritis, geriatric problems and stress. The root of Asparagus racemosus (commonly called ‘Satavar’) possess anti-diarrheal, anti-ulcerative, anti-spasmodic, aphrodisiac, galactogogue and other properties and has therefore gained its importance in Ayurveda, Siddha and Unani systems of medicine (Nadkarni, 1954). It has been observed that feeding W. somnifera and A. racemosus dried root powder significantly stimulates both humoral and cell mediated immune responses in swiss albino mice by Kuttan and Kuttan (1992). W. somnifera and A. racemosus extracts increase phagocytic activities of macrophages in vitro (Rege and Dahanukar 1993). There have been studies on the immunomodulatory activities of W. somnifera and A. racemosus in mice with myelo-suppression induced by cyclophosphamide, azathioprim or
prednisolone. Extracts of *W. somnifera* and *A. racemosus* have also shown immunopotentiating effects in cyclophosphamide treated mouse with ascitic sarcoma (Diwanay et al. 2004). Kalita and Dutta (1999) reported that maternal antibody was persistently found in sera samples tested against ND virus during the first week of age in broilers. This was attributed to transfer of natural passive immunity in young chicks as demonstrated by Hellar (1975). Muruganandan *et al.* (2001) reported the effects of ethanolic extracts of *W. somnifera* and *A. racemosus* on humoral immune system which was assessed by humoral immune response and cell mediated immune response in mice. Also, *Ocimum sanctum*, commonly known as 'tulsi' is also used in Ayurveda for various ailments including treatment of allergies. The plant has been reported to evince significant anti-stress properties. The beneficial effects of *O. sanctum* could therefore be due to its direct or indirect effect on the immune system. *O. sanctum* has been reported to modulate humoral immune response by releasing mediators for hypersensitivity reactions (Kujur 2001; Krishnamohan *et al.* 1997; Kumar 2003).

**Conclusion**

The use of various plant extracts and herbal fed additives in a specific dose during the scheduled vaccination regimen may be helpful in obtaining higher protective antibody against different infections including production and development of more effective cell mediate immune response for protection against various bacterial, viral and other diseases. Herbal formulation may be therefore recommended for use as positive immunomodulator in normal and immunocompromized susceptible animals and birds.

**References**


