

## IMMUNOSTIMULANT DRUGS IN UNANI MEDICINE

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Article Received on  
02 April 2020,

Revised on 23 April 2020,  
Accepted on 14 May 2020

DOI: 10.20959/wjpr20206-17643

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**ABSTRACT**

Immunostimulator is a substance which stimulates the components of immune system. Immunostimulation comprise a prophylactic or therapeutic concept which aims at the stimulation of our nonspecific immune system. Primarily it implies the non antigen dependent stimulation of the function and efficiency of natural killer cells, granulocytes, macrophages. The immune system dysfunction is responsible for various diseases like infectious diseases, asthma, arthritis, cancer, allergy and age-related changes. Unani physicians have mentioned 'immunity' as name of *Quwwat-e-Mudabbera-e-Badan* or *Quwwat-e-Mana'at* in unani classical literature. *Quwwat-e-Mudabbera* is the power of self preservation or adjustment, which strives to restore normal physiological function. In Unani medicine it has been mentioned that *tabi'at* (nature) and *mizaj* (temperament) are responsible for capacity of the body to resist the disease and pathogens.

A number of unani medicinal plants have been mentioned in promotion of health by unani physicians. Some of them are Asgand (*Withania somnifera*), Bargad (*Ficus benghalensis*), Elwa (*Aloe vera*), Garlic/Lahsun (*Allium sativum*), Gurhal (*Hibiscus Rosa sinensis* L.), Gilo (*Tinospora cordifolia*), Haldi (*Curcuma longa*), Musli safed (*Chlorophytum borivilianum*), Neem (*Azadirachta indica*), Satavar (*Asparagus recemosus* wild.), Tiryqa wabai (unani

compound formulation) and have been claimed to possess immunostimulatory activity. A lot more are still to be explored and offer scope for further research.

**KEYWORDS:** Immunostimulant drugs, Immunity, *Quwwat-e-Mana'at*.

## INTRODUCTION

The whole world is facing an attack of immunodeficiency disease, because it is the decreased or compromised ability to respond to antigenic stimuli by appropriate cellular immunity reaction may be due to secondary loss to immunoglobulins or an abnormality of  $\beta$  or T-cell lymphocytes. Immunostimulants drugs are those activate innate immunity or enhance the body's immunity, promote release of endogenous immune mediators (e.g., cytokines), enable the body's resistance power more efficient in order to prevent the body from various kinds of Infection, immunodeficiency conditions, or cancer. In the 1890s, Dr. William Coley, a surgeon at New York Memorial Hospital, used killed *Streptococcus pyogenes* and *Serratia marcescens* (Coley's vaccine) to treat sarcomas, carcinomas, lymphomas, melanomas, and myelomas in his patients.<sup>[1]</sup>

Immunity is the ability of body to identify and resist large numbers of infection and potentially harmful microorganisms, enabling the body to prevent or resist diseases and inhibit organ and tissue damage. Immune stem cells formed in the bone marrow, may remain in bone marrow until maturation or migrate to different body sites for maturation. The immune system has two mechanism which fight with invading organism are cellular immunity (cell mediated defence system) and humoral immunity (antibody mediated defence system).<sup>[2]</sup>

Unani physicians have mentioned 'immunity' as name of *Quwwat-e-Mudabbera* or *Quwwat-e-Mana'at* in unani classical literature. *Quwwat-e-Mudabbera* is the power of self-preservation or adjustment, which strives to restore normal physiological function within the limits prescribed by the constitution or the state of individual. This corresponds to defense mechanism, which is called to action in case any injury to or the altered state of the body.<sup>[3]</sup> In Unani medicine it has been mentioned that *tabi'at* (nature) and *mizaj* (temperament) are responsible for capacity of the body to resist the disease and pathogens.<sup>[4]</sup> With age the function of preserving *ratubaat* in a body do not remain same, which leads to weakening of all qua' of the body making *tabi'at* unable to struggle with the disease and pathogens after that natural healing is stopped.<sup>[5]</sup> Modern drugs being used in treating immune diseases but

they have side effects like nephrotoxicity, thrombocytopenia, bone marrow suppression, anaemia etc. There are large numbers of unani herbal medicinal plants have been used by unani scholars like Hippocrats, Galen, Rhazes, Avicenna, Ibne Baitar as immunostimulant in immune-deficiency conditions. In this review paper we have explained immunostimulant drugs in unani medicine which generally act by stimulating both specific and nonspecific immunity.

### IMMUNOSTIMULANT DRUGS

Several single unani immunostimulant drugs (table 1) as well as compound unani formulations (table 2) having been used as potent immunostimulant (*Muqawwi-e-Mana'at advia*) by unani physicians are as follows:

**Table 1: Single Unani Immunostimulant Drugs.**

S. No.	Unani drugs	Botanical name
1.	Amla	<i>Emblica officinalis</i> Linn.)
2.	Aslus-soos	<i>Glycyrrhiza glabra</i> Linn.
3.	Asgand	<i>Withania somnifera</i> (L.)
4.	Aam (Mango)	<i>Mangifera indica</i> Linn
5.	Anar	<i>Punica granatum</i> Linn.
6.	Abresham	<i>Bombyx mori</i>
7.	Balela	<i>Terminalia belerica</i> (Gaertn.) Roxb.
8.	Babuna	<i>Matricaria chamomilla</i> Linn.
9.	Bargad	<i>Ficus bengalensis</i> Linn.
10.	Daarchini	<i>Cinnamomum zeylanicum</i>
11.	Elwa	<i>Aloe vera</i>
12.	Foowah	<i>Rubia cordifolia</i> L.
13.	Filfil Daraz	<i>Piper longum</i> Linn.
14.	Gilo	<i>Tinospora cordifolia</i> (Thunb.) Miers
15.	Gurhal	<i>Hibiscus rosa sinensis</i>
16.	Halela	<i>Terminalia chebula</i> Retz.
17.	Haldi	<i>Curcuma longa</i>
18.	Ispand	<i>Peganum harmala</i> L.
19.	Kath	<i>Acacia catechu</i> (L.f.) Willd.
20.	Kalonji	<i>Nigella sativa</i>
21.	Kutki	<i>Picrorrhiza kurroa</i> Royle ex Benth.
22.	Lahsun/Garlic	<i>Allium sativum</i> Linn.
23.	Maveez	<i>Vitis vinifera</i> Linn.
24.	Musli safed	<i>Chlorophytum borivillianum</i>
25.	Mur Makki	<i>Commiphora myrrha</i>
26.	Neem	<i>Azadirachta indica</i> Linn.
27.	Neelofer	<i>Nelumbo nucifera</i> Gaertn.
28.	Raihan (Tulsi)	<i>Ocimum sanctum</i> Linn.
29.	Satawar	<i>Asparagus racemosus</i> Willd.

30.	Salab	<i>Orchis latifolia</i> Linn.
31.	Serpentaria	<i>Aristolochia serpentaria</i> L.
32.	Toot Safed/White Mulberry	<i>Morus alba</i> Linn.
33.	Tudri	<i>Lipidum iperis</i>
34.	Ushna	<i>Usnea longissima</i> Ach.
35.	Unnab	<i>Zizyphus vulgaris</i> L.
36.	Zanjabeel	<i>Zingiber officinale</i> Linn.
37.	Zafran	<i>Crocus sativus</i> Linn.
38.	Zoofa	<i>Hyssopus officinalis</i> L.

**Table 2: Immunostimulant Unani Compound formulations.**

S. no.	Unani Compound formulations
1.	Habb-e-Jawahar
2.	Imyotone (Hamdard)
3.	Jawarish Shahi
4.	Khamira Marwareed Sada
5.	Khamira Marwareed Khas
6.	Khamira Abresham Hakim Arshad Wala
7.	Khamira Gaozaban Sada
8.	Khamira Gaozaban Anbary Jawaharwala
9.	Laboob kabeer
10.	Majoon muqawwi
11.	Majoon Aarad khurma
12.	Maa-ul- laham
13.	Tiryaq-e-wabai

## SCIENTIFIC STUDIES AS IMMUNOSTIMULANT CARRIED OUT ON THE FOLLOWING DRUGS ARE

### Asgand (*Withania somnifera* Linn)

Significant increase of antibody titers to B. pertussis are found in immunized animals (DPT vaccine) with extract of Asgand 100 mg/kg/day for 15 days.<sup>[6]</sup> Administration of an extract from the powdered root of the plant *Withania somnifera* was found to stimulate immunological activity in B6/c mice. Treatment with five doses of withania root extract (20 mg/dose/animal; i.p) was found to enhance the total WBC count (17125 cells/mm on 10th day.<sup>[7]</sup>

### Aam/Mango (*Mangifera indica* Linn)

*Mangifera indica* Linn bark oil possesses potent Immunostimulant activity and have therapeutic efficacy for the prevention of autoimmune and infectious diseases when *Mangifera indica* bark oil in the dose of 150 & 300 mg/kg b.w, p.o was evaluated in rats as well as in mice by determining neutrophil adhesion to nylon threads and phagocytic index.<sup>[8]</sup>

**Bargad (*Ficu benghalensis* Linn)**

Significant immunostimulant activity was found on both the specific and non-specific immune mechanisms, when methanol extract of aerial roots of Bargad at concentrations of 0.5 mg/ml, 1.0 mg/ml and 2.0 mg/ml on albino rats.<sup>[9]</sup>

**Elwa (*Aloe vera*)**

Immunostimulant effect of elwa extract at the dose of 100 mg/kg on the albino mice was found in Pyrogallol-induced suppression of humoral as well as cell mediated immune response.<sup>[10]</sup>

**Garlic/Lahsun (*Allium sativum*)**

A study was envisaged to isolate immunomodulatory proteins from raw garlic, and examine their effects on certain cells of the immune system (lymphocytes, mast cells, and basophils) in relation to mitogenicity and hypersensitivity. Three protein components of approximately 13 kD (QR1, QR-2, and QR-3 in the ratio 7:28:1) were separated by Q-Sepharose chromatography of 30 kD ultrafiltrate of raw garlic extract.<sup>[11]</sup>

**Gurhal (*Hibiscus Rosa sinensis* Linn)**

Gurhal was found to possess significant immunostimulatory action on immune system in non-specific immunity, humoral immunity and cell mediated immunity on wistar albino rats with hydroalcoholic extract of flowers of gudhal (75, 150 and 300 mg/kg p.o.).<sup>[12]</sup>

**Gilo (*Tinospora cordifolia*)**

The confirmation of an immunomodulatory protein in gilo stem showing lympho-proliferative and macrophage activating properties reinforces the rationale of the use of gilo preparations in several ayurvedic medicines for immunomodulation.<sup>[13]</sup>

**Haldi (*Curcuma longa*)**

Aqueous extract of haldi rhizome at a dose of 50 mg/kg bw is given to carbon tetra chloride intoxicated Swiss albino mice for 15 days. It activate the granulocyte monocyte stimulating factor due to curcumin (main active constituent of haldi).<sup>[14]</sup>

**Kalonji (*Nigella sativa*)**

It is reported to increase the phagocytic activity by stimulating the immune cells and increase the activity of immune potential by giving Ethanol extract of kalonji seeds 1.5 g/kg, b.w. was

orally administered in dexamethasone-induced immune-suppressed male rabbits for 42 days.<sup>[15]</sup>

#### **Musli safed (*Chlorophytum borivilianum*)**

Immunostimulant activity was found when aqueous extract and polysaccharide fraction of Musli safed were given to wistar strain albino rats in dose of 50 mg/kg b.w. and 100 mg/kg b.w.<sup>[16]</sup>

#### **Neem (*Azadirachta indica*)**

Neem flowers is a potential immunostimulant against cytotoxic drugs when given aqueous extract of Neem flowers were given at doses of 200 and 400 mg/kg, p.o. to albino mice.<sup>[17]</sup>

#### **Satavar (*Asparagus recemosus wild*)**

Immune enhancing property was found oral administration of aqueous extract of satavar (at 1%) with or without milk to mice for 4 weeks.<sup>[18]</sup>

#### **Toot Safed/ White Mulberry (*Morus alba* Linn)**

*Morus alba* has increased both humoral immunity and cell mediated immunity when methanolic extract of *Morus alba* was administered orally at low dose and high dose of 100 mg/kg and 1 g/kg respectively and *Ocimum sanctum* (100 mg/kg, po) was used as standard drug. It showed significant increase in the phagocytic index in carbon clearance assay, a significant protection against cyclophosphamide induced neutropenia.<sup>[19]</sup>

#### **Tiryag wabai (unani compound formulation)**

A study conducted in NIUM, in which immune- stimulating effect of *Tiryag wabai* was evaluated. The response was measured by the assessment of TLC every 15th day, lymphocyte percentage, ALC, CD4 count and CD8 count before and after treatment. TLC, lymphocyte percentage, ALC and CD4 count showed a significant increase after treatment with respect to 0 day test and 45th day control CD8 count also showed increase, but the difference was not statistically significant. Immune- stimulating activity of Unani test drug Tiryag wabai and suggest its use in conditions where immune- stimulation is required and thus is suggestive of its therapeutic usefulness. Such plant based immune- stimulant may have application in the treatment of immunodeficiency diseases.<sup>[20]</sup>

## CONCLUSION

Stimulation of immune functions using unani medicine as a possible therapeutic measure has become an accepted therapeutic approach. Single unani drugs and compound formulations have been used since ancient times for the treatment of many ailments and diseases. Unani formulations may be therefore recommended for use as immunostimulator because they have potential therapeutic applications due to their high efficacy, low cost and low toxicity. But it is fact there are several drugs in unani system of medicine which are found to be effective and safe in stimulating the immune system needs to be scientifically validated for their immunostimulatory activities.

## ACKNOWLEDGEMENT

We are very thankful to our colleague for their cooperation and help in the presentation of this article.

## CONFLICT OF INTEREST

None.

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