Herbal Plants as Immunomodulators

Mansi Arora
Dept. of Botany, Post graduate govt. college for girls, sector-11, Chandigarh, India

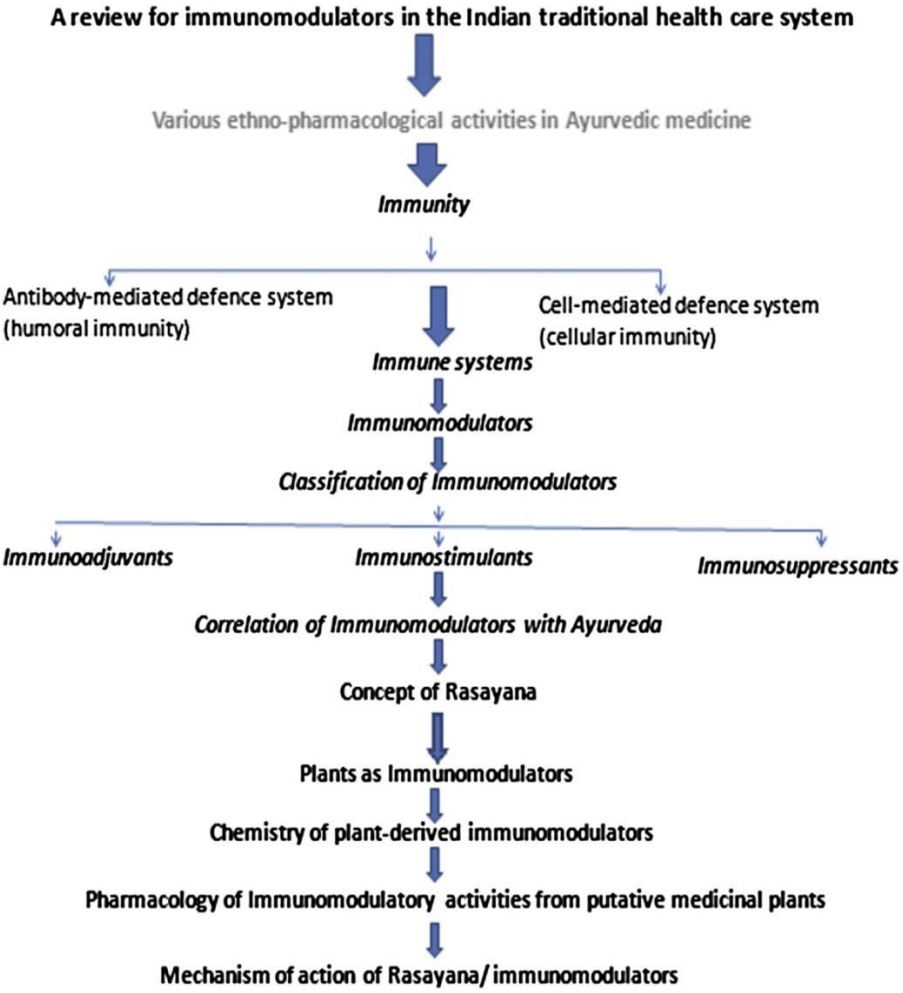
Abstract :- Herbal plants valued in Ayurvedic Rasayana for their medicinal potential. Immunotherapy or biological therapy is the treatment of disease by activating or suppressing the immune system. Immunomodulators are medications used to help regulate or normalize the immune system. Clinically, immunomodulators can be classified into the following three categories: Immunoadjuvants, Immunostimulants and Immunosuppressants. Use of some traditional medicinal plants are proposed to fight against Covid-19. There are many herbal plants which shows immunomodulating activity at a particular dose. So we can prepare the plant based immunobooster which activates the immune system and helps us to prevent the infection from COVID-19. There is a need to evaluate and screen the plant extracts libraries along with semi synthetic modifications .Innovative strategies must be developed to improve the process of plant collection, bioasaay screening and compound development must be employed. Finally, we can say that there is a great potential for the discovery of specific immunobooster from Indian medicinal plants.

Keywords :- Medicinal plants, Immunomodulator, Antimicrobial.

Introduction :- The concept of ayurveda is revived here. Ayurveda focuses on the use of plant based medicines and treatments. We can induce the concept of ayurveda into it and strengthen our immune system. There are two folds of ayurvedic objectives- to cure the disease of a person and to maintain the health of a healthy person. Goals of the ayurvedic treatment includes elimination of impurities, reducing symptoms, increasing resistance to diseases and reducing worry in patient's life. Patients may combine several herbs to increase the resistance against diseases and increases the immune power. The aim of this review is to highlight the results of the plant based immunomodulators having potential immunomodulatory activity[1]. Ayurveda is devoted to 'Rasayana' drugs to enhance body resistance[2-5]. Plant resources are the integral part of human society. After fulflling the basic needs like food and shelter, humans search for a suitable remedy among plants for curing various diseases[3]. Traditional medicine is used to maintain health and to prevent the

diseases. The mechanism of immunomodulator in Ayurveda is depicted through flow chart[4].

TABLE 1 : Mechanism of action of immunomodulators in Rasayana.



Reference - (DINESH KUMAR, 2012165-184), Journal of Microbiology, Immunology and Infection,

Methods

Ethnobotanical Data Collection :- Therapeutic activity can be estimated by the measure of plant secondary metabolites. Immunomodulators involves a multidisciplinary approach combining botanical, phytochemical and biological approaches[12]. Herbs used against Covid-19 proves effective is a matter of historical evidences and legacy. India have vast number of medicinal plants showing antimicrobial properties. To obtain the active compounds of plants-first make the crude plant extract and it undergoes analyzation through various chromatographic methods.

Plants Proved Effective Against COVID-19 :-

- **Onion/ Allium cepa** : Onions have antioxidant activity due to the presence of flavonoids and organo sulfur compounds. Onion shows the presence of proline which is responsible for proinflammatory cytokines and shows antiviral effect against certain viruses[4].
- **Long Pepper/ Piper longum** : Piper contains piperine which act as a stimulant to modulate the immune response. It is beneficial against asthma and cures several other respiratory problems. It can be taken along with ginger to avoid the liver problems[5].
- **Guduchi/ Tinosporia cordifolia** : It is considered as "Rasayana" in Ayurveda. It is consider as drug which can improve body resistance power. Immunostimulatory activity was assessed by lymphocyte proliferation and macrophage activation assays. Fresh guduchi stem/leaf, guduchi satwa and guduchi capsules were also analyzed for the presence of guduchi ImP. Its chemical constituents help to fight against virus through preventing fusion or adsorption[6-8].
- **Tulsi/ Ocimum sanctum Linn.** : Tulsi is a wonder herb that is much favoured by Ayurveda. This aromatic leaf can be your primary line of defence against COVID-19. Tulsi or basil is a powerful germicide. Simply chew a few leaves first thing in the morning. You can also add a few drops of water boiled with tulsi leaves into your food. It contain essential oils such as eugenol which have carminative, stomachic, antispasmodic and antiasthmatic peoperties.
- **Chamomile/Matricaria chamomilla** : It boost the immunity as it is a immunoactivator.

- **Tea leaves / Camellia sinensis** : It contains Epigallocatechin gallate, quercetin, gallicacid and it acts as an anticancer activity, lipid lowering activity, anticataract activity[11].
- **Ginger/ Zingiber officinale** : Ginger has been an age-old remedy for flu and the common cold. It can also be effective against COVID-19. It contains gingerol – an antioxidant that can power up our immune system and kill viruses. Ginger is particularly good in preventing respiratory tract infections. Add ginger to your meals or you can also have it raw.

Treatment Using Plant Parts :- Different plant parts are harvested by botanists for the preparation of traditional remedies. The most widely accepted and used plant part were roots i.e. 31.4% [9] followed by leaves i.e.24.4% [10]. Roots of various plants proved effective against various common ailments.

Conclusion :- This review emphasis on prevention done against covid-19 using common herbal medicinal plants. Herbal formulation is regarded as positive immunomodulator. There is need to screen the herbal plants in the forest since India is one of the 12 leading biodiversity and placed on a gold mine of well practiced and recorded knowledge of traditional herbal plants[3]. Conservation of forest by the local bodies, tribal people is crucial to avoid the further loss and to increase our traditional knowledge.

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