

# Management of Autoimmune Disorders Using Polyherbal Dosage Forms

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## Abstract

Autoimmune diseases arise when the immunologic tolerance to autoreactive immune cells is disrupted, causing the immune system to attack self-molecules. This discussion provides an overview of selected autoimmune diseases and possible mechanisms of immune autoreactivity, in most instances the events that initiate the immune response to self-molecules are unknown, but a number of studies suggest associations with environmental and genetic factors and also certain types of infections. Research has identified a rise in the occurrence of autoimmunity and autoimmune disorders in recent decades. Autoimmune disorders impact numerous individuals across various regions globally and have emerged as a significant issue in public health. Projected annual growth in the global incidence and prevalence of autoimmune diseases stands at 19.1% and 12.5%, respectively. Autoimmune conditions like type 1 diabetes, inflammatory bowel disease, and rheumatoid arthritis arise when autoreactive immune cells, particularly T cells and B cells, become overactive and recruited, leading to self-tissue harm. Diseases such as myasthenia gravis, Addison's disease, Graves' disease, and multiple sclerosis impact nerve signals, damage the myelin sheath, target glands (resulting in hormone deficiency or excess), and affect skin cells, respectively. Herbal remedies have been extensively utilized throughout history for treating various ailments, and the creation of effective cures sourced from plants would signify meaningful advancement in disease treatment. Polyherbal products have been used worldwide due to their healing and therapeutic benefits. These formulations can be enhanced to produce more powerful therapeutic effects while reducing toxicity. This article lists several commercial and non-commercial polyherbal preparations utilized globally for the treatment of different autoimmune disorders.

**Key words:** autoimmune disorders; polyherbal formulations; rheumatoid arthritis; diabetes mellitus; addison's disease; graves' disease; multiple sclerosis; myasthenia gravis; psoriasis; inflammatory bowel disease

## 1. Introduction

### 1.1 Autoimmune Diseases:

Autoimmune diseases arise when the immune system targets self-molecules due to a breakdown in immunologic tolerance towards autoreactive immune cells. These cells promote the production of autoantibodies that bind strongly to self-molecules, resulting in their targeting and destruction [1]. In many instances, the factors that initiate the immune response to self-molecules remain largely unknown, yet various studies have indicated connections to genetic, environmental, and infectious aspects. About 3% of the populations in Europe and North America are currently affected by autoimmune diseases, often displaying symptoms of various disorders. Considering that epidemiological studies are lacking for some of the rarer diseases, this may be an underestimation. Moreover, there are signs that several common medical disorders, such as inflammatory bowel disease and atherosclerosis, might possess an autoimmune aspect. Since nearly 75% of individuals with autoimmune diseases are women, females have a significantly higher chance than males of developing such conditions. Studies show that women in their

early post pubescent stage are about ten times more prone than men to develop autoimmune diseases [2].

### Common Autoimmune Diseases

#### 1.1.1 Diabetes Mellitus:

Chronic metabolic disorders such as diabetes mellitus affect an individual's physical, mental, and social wellbeing. It is characterized as a group of conditions defined by increased blood sugar levels and alterations in the metabolism of fats, carbohydrates, and proteins [3]. Since diabetes primarily arises from genetic factors and ecological aspects, the beta cells in the pancreas generate "insulin," which controls blood glucose levels. Diabetes occurs when the body's cells cannot process sugar properly because of ineffective insulin, effects on the target tissues due to lack of sensitivity or presence of insulin. Insulin's inability to process glucose occurs, when the pancreas does not generate sufficient insulin or when the body's insulin functions inadequately. [4]. The persistent high blood sugar levels in diabetes

are linked to long-term harm, dysfunction, and failure of various organs, particularly the eyes, kidneys, nerves, heart, and blood vessels.

The various types of diabetes mellitus include,

- **Type 1 diabetes mellitus:** It is an autoimmune disease in which the beta cells of the pancreas lose the capacity of producing the hormone INSULIN. The islet beta cell destruction usually leads to insulin deficiency. As a result, patients with this condition are entirely dependent on exogenous insulin sources. Patients need to frequently give insulin medicine in order to survive.
- **Type 2 diabetes mellitus:** It is a metabolic disorder, where the pancreas makes the insulin initially, but the body has difficulty utilizing this glucose-regulating hormone. The pancreas eventually becomes incapable of producing enough insulin to meet the body's demands which leads to weight gain and insulin resistance.
- **Gestational diabetes mellitus:** A level of glucose intolerance that appears during pregnancy, it is a transient metabolic abnormality that any previously nondiabetic woman can develop during pregnancy, typically in the third trimester. This illness is caused by hormonal changes, obesity, and a family history of diabetes [5].

Examples of polyherbal formulations available in the treatment of Diabetes Mellitus: Diabecon, Diabecon, Syndrex, Diabeta, Pancreatic tonic

### 1.1.2 Psoriasis/Psoriatic Arthritis:

Psoriasis is a long-lasting inflammatory skin condition that may attack at any age. Skin cells typically develop and fall away when they are unnecessary. Psoriasis leads to the rapid production of skin cells. The extra cells accumulate and create inflamed red areas, often featuring silvery-white plaques on the skin [6]. It's a disease characterized by inflammation mediated by the immune system. The hereditary composition is a factor that can lead to the development of this disease [7]. At first, T-cells and the immune system transmit signals, through which T-cells and additional cells become engaged, resulting in faster inflammation of skin cells [8]. After conducting research, it was discovered that there is more than one gene involved in psoriasis, not just one. The illness cannot be healed; However, symptoms can be treated and the disease can be managed to a certain degree[9].

Depending upon the severity, duration, size, pattern of scales it can be subdivided into different types, they are:

- **Pustular psoriasis:** This type of psoriasis can be mostly seen in adults. The bumps are raised onto the skin which are filled with non-infectious pus, the skin area near the pus becomes tender & red. It can be seen in localized (Feet & Hands) and even in generalized areas. Random patches can be seen all over the body.
- **Guttate psoriasis:** It can start in childhood or young adulthood. It has tear drop shaped spot & the spots are not usually as thick as plaque. Appears on large areas of the body like Limbs, Scalp, Legs etc.
- **Endothemic psoriasis:** This type of psoriasis may be mortal because there is more inflammation and exfoliation of skin can be seen which disturbs the ability to regulate the body temperature & skin may not perform its function properly.
- **Plaque psoriasis:** It is the most common type of psoriasis & it affects the majority of the patients with psoriasis. Plaque psoriasis typically presents as elevated areas (Elbow, Lower back, Knee, Scalp etc) of red skin covered with silvery white scaly skin.

- **Inverse psoriasis:** It is also referred to as flexural psoriasis. The patches will have a smooth appearance and irritate the skin. It is visible in regions such as the thigh and groin, beneath the breast, underneath and excess weight around the abdomen.
- **Nails psoriasis:** This form of psoriasis alters the look of both toe and fingernails. Alterations could involve nail pitting, skin ticking beneath the nail, as well as discoloration under the nail plate, among other things. As many as, 30 percent of people with psoriasis can also experience swelling, stiffness, and joint pain. This kind of illness is referred to as rheumatoid arthritis [10].

Examples of polyherbal formulations available in the treatment of Psoriasis: Barphani psoroclear, Cutisora, Soricure, Lapsorin, Psoraze [11]

### Types of polyherbal formulations:

- 1) **Tinctures:** These are preparations that contain both water and alcohol extract and are used for herbal plants which are not very much soluble in water and in cases where the preparation is to be stored for a longer period of time. When prepared properly tinctures can be stored up to several years without any loss in potency. When more alcohol is used in the preparation the shelf life can be increased and the alcohol content when determined can give information regarding shelf life. Standard tincture contains 1 part of herb in 4 parts of liquid i.e. 1:4 tincture.
- 2) **Poultices and Compresses:** Poultices earlier were prepared by chewing the herbal leaves or roots using mouth and spitting it out on the skin or with the help of mortar and pestle the leaves are triturated and paste is obtained. A light cotton cloth can be used as a bandage to hold the paste on the surface of skin.  
  
Compresses involve simple soaking of cloth into already prepared tincture, decoction or infusion and placing it on the skin or affected area.
- 3) **Hot baths with medicinal plants:** It is one of the widely used herbal remedies in which the Poly herbs are added into bath water and the patient is soaked in it.
- 4) **Inhalation therapy:** It is also termed as respiratory therapy, it involves the usage of herbal materials in powders, liquids or gases/vapours which are inspired through air. Forms of inhalation include smoke of burnt plants, powder for snuffing, liquid inhaled by dropper, sprayer, atomizer, vapours inhaled by inhalers, humidifier gases.
- 5) **Capsules:** In this preparation powdered herbs are taken as capsules orally but it can also be sprinkled on to the food or taken along with water. The powder is poured into the halves of the capsule by scooping the powder carefully and filling the capsule halves once after filling is completed the halves which are separated are closed together and stored in an airtight container in a cool place.
- 6) **Medicated wines:** These are also known as tonic wines. These are generally used for digestive problems and are less stimulating to the body when compared to spirit.
- 7) **Syrups:** These are liquid dosage forms which involve the usage of sugar along with infusion, decoctions, juices, liquors which are fermented or water solutions. Equal proportions of honey or sugar are mixed together with herbal extract.
- 8) **Tablets:** These are solid dosage forms in which herbal extracts are powdered and then compressed or moulded into a tablet form.
- 9) **Ointments:** These are semi solid dosage forms which are used for applying on to the skin surface which penetrate through the

skin layers. The plant part or plant is heated in fat or oil until discolouration of herb is observed.

**Creams:** These are semi solid preparations which are viscous in nature. These can be of 2 types: oil in water type and water in oil type [12].

#### Marketed poly herbal dosage forms [13]:

Autoimmune disease	Marketed polyherbal formulation	Dosage form	Manufacturing company	Components
Rheumatoid arthritis	Majoon suranjan	Paste and powder	Tayyebi, hamdard laboratories india	Ipomea turpethum, Terminalia cheluba, Colchicum luteum, Capparis spinosa, Coriandrum sativum, Rosa damascus, Plumbago zelanicum, Zingiber officinalis, Aloe barbadensis, Apium graveolens, Convulvulus scammony, Sepia latimanus, Foeniculum vulgare, Lawsonia inermis, Piper nigrum, Zataria multiflora, Ricinus communis
	Artha cure	Tablet	Royall enterprise, MK medicine	Syzgium aromaticum, Aconitum ferox, Strychnos nux vomica, Allium sativum, Cuscuta reflexa Myristica fragrans
	Rheum Artho gold	Capsules	Baidyanath	Colchicum luteum, Withania somnifera, Strychnos nux vomica, Boswellia serrata, Ghanna sativa, Biotite calx, Nyctanthes arbortristis, Calx of copper pyrites, Commiphora mukul, Ipomoea digitata Calx of corat
	Rumalaya forte	Tablet and gel	Himalaya wellness	Boswellia serrata, Cammiphora wightii, Alpiniaga galangal, Glycyrrhiza glabra, Tribulus terrestris, Tinospora cordifolia, Vitex negundi, Zinger officinalis
	Ortho joint oil	Oil	Mexico Laboratories	Ricinus communis, Vign unguiculata, Cinnamomum zeylanicum, Gaultheria fragrantissima, Cinnamomum camphor, Menthe arvensis, Wthania somnifera

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