AYUSHDHARA
ISSN: 2393-9583 (P)/ 2393-9591 (O)
An International Journal of Research in AYUSH and Allied Systems

Research Article

STANDARDIZATION OF IN HOUSE PREPARED AN IMMUNOBOOSTER POLYHERBAL FORMULATION

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KEYWORDS: Herbal Formulation, Immunobooster Polyherbal Formulation.

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ABSTRACT

Immunobooster Polyherbal Formulation is an Ayurvedic formulation with all the ingredient used to boost the immune system. In the present study the standardization parameter for a poly-herbal formulation Immunobooster Polyherbal Formulation is validated using marketed as well as inhouse formulation. The parameter for standardization are organoleptic character, loss on drying, bulk density, tapped density, angle of repose, carr's index, husner's ratio, florescence analysis, powder microscopy, Phytochemical screening, ash values, extractive values etc were evaluated during the study on both formulation. The set parameters were found to be sufficient to standardize the Immunobooster Polyherbal Formulation and can be used as reference standards for the quality control/ quality assurance study mostly on plant drugs for their primary health care needs.

INTRODUCTION

The body first line of defense is non-specific defences, including phagocytes such as macrophages. If these are overwhelmed, activation of powerful immune system follows. Immunity possesses two key attributes not seen with non specific defenses: specificity and memory[1]. The various formulation are available in market the Immunobooster Polyherbal Formulation is one of them. The ingredients of formulations Immuno booster Polyherbal Formulation are *Ashwagandha* (*Withania somnifera*), *Satavari* (*Asparagus racemosus*), Black *Musli* (*Curcullago orchioides*), Gokhru (*Tribulus terrestris*), *Amla* (*Emblica officinelis*), *Shankhpuspi* (*Conbolbulus pluricaulis*), *Brahmi* (*Baccopa monnieri*), Soya, Sugar and milk sugar. As available literature and market survey states that the above formulation available in market is product of numerous companies which might have deviations in quality as well as quantity of ingredients used in this formulation. Hence an opportunity has to be made to formulated this formulation in house and then proceed for standardization.

MATERIALS AND METHODS

Collection & Preparation of Immunobooster Polyherbal Formulation

The crude drugs used in preparation of Immunobooster Polyherbal Formulation were collected from local Market of Dehradun in March 2018. All plant parts were then dried in shade, powdered and passed through sieve no. 60 and lastly packed in a well closed container to protect them from moisture. Each ingredients 5gm weight and separately, mixed together to obtain a homogeneous blend.

Organoleptic Characteristic: The formulated powder was tested for organoleptic characteristic.

Table 1: Organoleptic properties of Immunobooster Polyherbal Formulation

S.No.	Parameter	Result standard	In House
1.	Appearance	Smooth	Smooth
2.	Color	Creamish white	Greenish yellow

3.	Odour	Characteristic	Characteristic
4.	Taste	Sweet	Sweet
5.	Texture	Powder	Powder

Pharmacognostical Studies[2]

The leaf powder was studied for their physico-chemical constant which include ash values, extractive values. (Table 2)

Table 2: Extractive values of Immunobooster Polyherbal Formulation

S. No	Types of extractive value	Percentage yield (Marketed Prep.)	In house
1.	Chloroform	0.8%	0.7%
2.	Di ethyl ether	0.2%	0.3%
3.	Methanol	0.6%	0.5%
4.	Water	0.7%	0.6%

Determination of Physical Characteristics: The powdered drug was taken and was kept for determination of powder characteristics like bulk density, true density, angle of repose, hausner's ratio etc.[3] (Table 3)

Determination of Moisture Content

To estimate the loss on drying 3 gm of air dried crude drug or the prescribed quantity of the material as specified for that specific substance is accurately weighed in a dried and tared petridish.[2]the substance is to be dried to constant mass or for the prescribed time as specified. (Table 3)

Table 3: Pre formulation studies of Immunobooster Polyherbal Formulation

S. No.	Parameters	Value STD	Value In house
1.	Bulk density gm/cm^3	11 m/v	10m/v
2.	Tapped density	10m/v	8m/v
3.	Hausner's ratio	0.5m/v	0.6m/v
4.	Carr's index	33.2m/v	30m/v
5.	Angle of repose	37.28	37.81
6.	Loss on drying	25%	25%
7.	Total ash value	6.5%	8.0%

Determination of Florescence analysis of Powder: One mg of powdered drugs of each formulation was exposed to ultraviolet light at wavelength of 254 nm and 365 nm and in daylight while wet after being treated with different reagents [4] (Table 4).

Table 4: Fluorescence Analysis of Immunobooster Polyherbal Formulation

S.No	Sample	Visible light		Short UV 254 nm	
		In House	Market	In House	Market
1.	Drug	Greenish	Cream	Greenish	Cream
2.	Drug+ acetic acid	Cream	Cream	Reddish Brown	Dark Brown
3.	Drug+ $FeCl_3$	Dark Brown	Dark Brown	Red	Dark Blue
4.	Drug+ HNO_3	Pink	Orange	Dark Brown	Light Blue
5.	Drug+ Bromine	Yellow	Pink	Pink	Yellow
6.	Drug+ iodine	Yellow	Yellow	Orange	Yellow
7.	Drug+ H_2SO4	Purple	Purple	Blue	Purple
8.	Drug+ KOH	Pink	Orange	Dark Brown	Orange
9.	Drug+ NaOH	Yellow	Cream	Cream	Cream

Preliminary phytochemical test: Preliminary phytochemical test for hexane, benzene, chloroform and alcohol extract of the drug were carried out. It shows the presence of alkaloids, flavanoids, sugars, tannins, saponins. [5] (Table 5)

Table 5: Phytochemical screening of Immunobooster Polyherbal Formulation (In house & Market)

Table 5: Phytochemical Screening[5]									
S.No.	Test	Chloroform extract		Di ethyl ether extract		Ethanol extract		Water Extract	
		Std.	In house	Std.	In house	Std.	In house	Std.	In house
1	Alkaloids	+ +	+ + +	+ +	+ +	-	+ +	-	+ + +
2	Tannins	-	-	-	-	-	+		+
3	Flavanoids	-	-	-	-	-	-	-	-
4	Carbohydrates	+ +	+ +	+	+	+ +	+ +	+ +	+ +
5	Glycosides	-	+	-	+	-	+	-	+
6	Saponins	-	-	-	-	-	-	+	+
7	Protein	+	-	+	-	+	+	+	+

Powder microscopy: The powder was taken and was examined microscopically to identify the various features like phloem fibres, parenchyma, starch grains, endosperms, calcium oxalate crystals, oil glands etc by using various reagents.[6] (Table 6)

Table 6: Powder microscopy of Immunobooster Polyherbal Formulation (In house & Market)

S.No.	Reagent Used	Observation	Std	In house
1	Phlorogucinol + HCl	Vascular bundles, fibres	+	+
2	Iodine solution	Starch Grains	+	+
3	HCl	Calcium oxalate	+	+
4	Picric acid	----	+	+
5	Ruthenium red	----	-	+

RESULT AND DISCUSSION

In house formulation was prepared in accordance with the Ayurvedic Formulary of India. As part of standardization procedure, the finished product Immunobooster Polyherbal Formulation was tested for relevant physical and chemical parameters. The powder is greenish in colour. The powder was smooth, having Colour- Greenish, Odour-Characteristic, Taste- Sweet. Quality tests for different Immunobooster Polyherbal Formulation and its individual ingredients were performed for moisture content; ash content, water soluble extractive, methanol soluble extractive, acid insoluble ash and water insoluble ash were found to be within standard ranges. The extractive values and ash values of powder, is given in Table 2. Variations were observed in most of the physicochemical parameters studied. The total Ash value was found 8% w/w. Acid insoluble ash value was found to be 9% w/w. On the contrary, water soluble ash percentage was found 3.7 % w/w and sulphated ash was found to be 11% w/w. The extractive values of formulations in sulphated ash value were found to be much higher than other solvent's extractive values. Loss on drying at (105ºC) is also presented in Table 3. In fluorescence analysis the powder samples were exposed to ultraviolet light at wavelength of 254nm and 366nm and day light after being treated with different reagents as reported in Table 4. Fluorescence analysis results shows whether any fluorescent ingredients are present or not, here we have found there was no such material found in any of formulation and individual ingredients either. The true and bulk density was calculated and to find the good flow angle of repose was also observed, the flow ability of the formulation was found to be poor in both market formulation and in house formulation, which was further confirmed by high values of Hausner ratio (Table 3). Presence of reducing sugars, steroids, flavanoids, saponins and tannins are prominent in various extracts (Table 5).Presence of starch grains and calcium oxalate in powder microscopic evaluation. (Table 6)

CONCLUSION

The immune system is the body's defense against infectious organisms and other invaders. Through a series of steps called the immune

response, the immune system attacks organisms and substances that invade body systems and cause disease.[1] As an alternate therapy the Ayurvedic medicine Immunobooster Polyherbal Formulation has been standardized by intervention of scientific quality control measures in the traditional preparation describe in classical texts. Pharmacognostical characters established for the raw material could be employed as Q.C, standards for evaluating its identity and can be used for routine analysis of Purity and potency of the material and formulations following procedure given could be performed in QC\QA laboratory of pharmaceutical house. Our findings suggest that, Ayurvedic polyherbal preparations extracts have great potential as immune booster and nervine stimulation. Evaluation of these herbal preparations gives better information regarding the immune booster efficacy of herbal medicine available in India. This study supports the use of these herbal preparations not only as the dietary supplement but also as agent to enhance the immune system and make body perfect to fight against any infection or disease.

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Cite this article as:
Dolly Rathor, Om Prakash, Pankaj Nainwal. Standardization of in House Prepared An Immunobooster Polyherbal Formulation. AYUSHDHARA, 2018;5(1): 1521-1524.

Source of support: Nil, Conflict of interest: None Declared