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Research Article

STANDARDISATION OF SUDHARSHANA CHURNA- A POLYHERBAL FORMULATION

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ABSTRACT

Standardisation of herbal formulation is essential in order to assess the quality of drugs, based on the concentration of their active principles. The present paper reports on standardisation of of sudharshana churna, a poly herbal ayurvedic medicine used as antimalarial, antipyretic, antiviral and anti diabetic formulation. It is recommended for all types of fever including bone fever and common cold. sudharshana churna was prepared as per Ayurvedic Formulary of India. In-house preparation and two marketed have been standardised on the basis of organoleptic characters, physical characteristics, physico-chemical properties and Preliminary Phythochemical Analysis. The set parameters were found to be sufficient to evaluate the churna and can be used as reference standards for the quality control/quality assurance laboratory of a Pharmaceutical house.

Key words: Sudarsana churna,standardization, poly-herb formulation.

INTRODUCTION

Standardisation is an essential factor for polyherbal formulation in order to assess the quality of drugs based on the concentration of their active principle. It is very important to establish a system of standardisation for every plant medicine in the market, since the scope of variation in different batches of medicine is enormous. Plant material when used in bulk quantity may vary in its chemical content and therefore, in its therapeutic effect according to different batches of collection e.g. collection in different season and/or collection from sites with different environmental surrounding or geographical location. The increasing demand of the population and chronic shortage of authentic raw materials have made it incumbent, so there should be some sort of uniformity in the manufacture of Ayurvedic medicines so as to ensure quality control and quality assurance [1] . The World Health Organisation (WHO) has appreciated the importance of medicinal plants for public health care in developing nations and has evolved guidelines to support the member states in their efforts to formulate national policies on traditional medicine and to study their potential usefulness including evaluation, safety and efficacy [1]. "Sudharshana churna" is a polyherbal Ayurvedic medicine used as anti malarial, antipyretic, antiviral and anti diabetic formulation. It is recommended for all types of fever including bone fever and common

cold. The present paper reports on the standardisation of Sudharshana churna based on organoleptic characters, physical characteristics, Physico-chemical properties and Preliminary Phythochemical Analysis [2].

Materials and Methods

Plant material

Sudharshana churna consists of fourty two ingredients [3] . All these ingredients were procured from the local market of Kancheepuram,Tamilnadu, India and were authenticated by botanist Dr.P.Jayaraman.Directer,Botonical Research Centre. Tambaram.

Preparation of Sudharshana churna

The churna was prepared as per the procedure given in Ayurvedic Formulary of India. All the ingredients viz., All the ingredients were powdered separately, passed through 80 # sieve and then mixed together in specified proportions to get uniformly blended churna.

Marketed samples

The marketed samples of various brands of Sudharshana churna i.e. Impcops (I) and Dabur (D) and the Lab preparation (L) were standardised based their organoleptic characters, physical characteristics Physico-chemical properties and Preliminary Phythochemical Analysis.

Organoleptic evaluation

Organoleptic evaluation refers to evaluation of formulation by color, odour, taste, texture etc. The organoleptic characters [4] of the samples were carried out based on the method as described by Siddiqui et.al.

Physico-Chemical Investigations

Physico-chemical investigations of formulations were carried out including determination of extractive values and ash values [1], [5], [6]

Preliminary Phythochemical Analysis

Preliminary Phythochemical Analysis of formulations were carried out including Test For Alkaloids, Test For Cardiac Glycosides, Test For Carbohydrates, Test For Sugar, Test For Steroids, Test For Tannins, Test For Proteins, Test For Terpenoids, Test For Flavonoids,Test For Autho Cyanin And Test For Quinonones.[7]

Determination of physical characteristics of powder formulation

Physical characteristics like bulk density, tap density, angle of repose, Hausner ratio and Carr's index were determined for different formulations. The term bulk density refers to method used to indicate a packing of particles or granules. The equation for determining bulk density (B_D) is (B_D) =M/V_b where M is the mass of particles and V_b is the total volume of packing. The volume of packing can be determined in an apparatus consisting of graduated cylinder mounted on mechanical tapping device (Jolting Volumeter) that has a specially cut rotating can. Hundred gm of weighed formulation powder was taken and carefully added to cylinder with the aid of a funnel. The initial volume was noted and sample was then tapped until no further reduction in volume was noted. The initial volume gave the bulk density value and after tapping the volume reduced, giving the value of tapped density.

Angle of repose has been used as an indirect method quantifying powder flowability, because of its relationship with interparticle cohesion. The fixed funnel and the free standing cone method employs a method that is secured with its tip at a given height (H), above the glass paper that is placed on a flat horizontal surface. Powder or granules were carefully poured through the funnel until the apex of the conical pile just touched the tip of funnel. Thus, with R being the radius of the conical pile. $a = \tan^{-1} H/R$, where a is the angle of repose.

Hausner ratio is related to interparticle friction and as such can be used to predict the powder flow properties. The equation for measuring the Hausner ratio is D f /D o

Where, D f = Tapped density and D o = Bulk density.

Carr's index is another indirect method of measuring the powder flow from bulk density. The equation for measuring Carr's index is 1- Do/ Df ×100

Where Df = tapped density, Do = Bulk density. [8],[9],[10]

RESULTS AND DISCUSSION

In Lab formulation was prepared in accordance with the Ayurvedic Formulary of India [Table 1]. Water soluble and Choloroform soluble extractive values are given in the [Table 2] and ash values (total ash and acid insoluble ash) in [Table 3]. The physical charecters are given in the [Table 4]. The ash values of the samples were carried out based on the method as described by the World Health Organisation (WHO) guidelines for medicinal plant materials. Organoleptic comparisons between in-lab formulations and marketed formulations are given in the [Table 5]. The phyto-chemical and comparisons between in-house formulations and marketed formulations are given in the [Table 6] .The results obtained with the market formulations and the in-house formulations were found to be comparable and variation was insignificant. Acid insoluble ash value for In-Lab formulation was found to be 2.2%w/w , in case of marketed formulation this was found to be 1.5%w/w and 1.8%w/w (Impcops and Dabur sample respectively).

Table 1: Formulation of Sudharshana Churna

S.No	Common name	Biological name	Parts used	Parts
1.	Chirata	Swertia chirata buch-ham	Whole plant	59
2.	Patolpatra	Trichosanthes dioica roxb.	Seeds	1
3.	Prshnparni	Ureria picta,desv.	Whole plant	1
4.	Kaliyak	Jateorrhiza palmate linn.	Heart wood	1
5.	Haridra	Curcuma longa linn.	Rhizome	1
6.	Davdaru	Cedrus deodar roxb, loud	Heart wood	1
7.	Vacha	Acorus calamus linn.	Rhizome	1
8.	Motha	Desmodium trifiorum dc	Rhizome	1
9.	Harr	Terminalia chebula,retz	Fruits	1
10.	Duralabha	Alhagi pseudalhagi bieb. Desv.	Whole plant	1
11.	Kakrasinghi	Rhus succedonia linn.	Seeds	1
12.	Kantkari	Solanum xanto carpum schrad & wendi	Fruits	1
13.	Sonth	Zingiber officinale wild rose.	Rhizome	1
14.	Triman	Legenaria siceraria(mol)standl	Fruits	1
15.	Pittapara	Naregamala aiata linn.	Whole plant	1
16.	Neem chal	Azadiracta indica a. Juss	Bark	1
17.	Pipra mool	Piper longum linn.	Root	1
18.	Netrabala	Pavonia odorata willd.	Whole plant	1
19.	Kachoor	Hedychim spcatum ham	Rhizome	1
20.	Puskarmul	Inula racemosa hook	Roots	1
21.	Pipli	Piper longum linn.	Fruits	1
22.	Murva	Marsdemia tenacissima weight and arn.	Roots	1
23.	Amla	Embelica officinale gaerth.	Fruits	1
24.	Giloy	Tinospora cordifolia willd	Stem	1
25.	Kutki	Picrorrhizakurrora benth	Rhizome & Roots	1
26.	Chitrak	Plumbago zeylanica linn.	Root	1
27.	Sagine	Moringa oleifecalam lam	Seed	1
28.	Satawari	Asparagus racemosus willd	Stolon	1
29.	Daruharidra	Belbelis aristata dc	Stem	1
30.	Patanga	Didymocarpus pedicellata willd	Heart Wood	1
31.	Padma kath	Nelumbeum speciosum willd	Bark	1
32.	Chir	Pinus roxburghil sarj	Bark	1

33.	Kush	Andropugan muricatus retz.	Whole plant	1
34.	Dal chini	Cinnamon cassia blume	Bark	1
35.	Tejpatra	Cinnamomum inners rcinw	Leaves	1
36.	Shal parni	Desmodium gangaticum dc	Roots	1
37.	Azwoin	Ptychotis coptica dc	Fruits	1
38.	Atis	Aconytum hetrophullum wall.ex royle	Roots	1
39.	Bilva	Aegle marmelos corr.	Bark	1
40.	Kali mirch	Piper nigrum linn.	Fruits	1
41.	Kurchi	Holarrhena antidysentrica wall	Seeds	1
42.	Mulethi	Glycerrhyza glabra linn.	Roots & Stolons	1

Table 2: Extractive values of three batches

S.No	Exctractive value	Impcops (I) (Mean±SD)	Dabur (D) (Mean±SD)	Lab Preparation(L) (Mean±SD)
1	Chloroform soluble extractive value	21%w/w	20%w/w	18%w/w
2	water soluble extractive	6%w/w	5.2%w/w	4.9%w/w
3	Total alkaloid content by extraction method	2.8%w/w	2.46%w/w	2.12%w/w

Table 3: Ash Valuses of Three Batches

S.No	Ash value	Impcops (I) (Mean±SD)	Dabur (D) (Mean±SD)	Lab Preparation(L) (Mean±SD)
1	Total ash value	17.5%w/w	16.4%w/w	13.8%w/w
2	water soluble ash	14.9%w/w	15.2%w/w	14.2%w/w
3	water insoluble ash	2.12%w/w	2.26%w/w	2.40%w/w
4.	acid insoluble ash	1.5%w/w	1.80%w/w	2.2%w/w
5.	sulphated ash value	90%w/w	92%w/w	89%w/w

Table 4: Physical charecters of three batches

S.No	Physical characters	Impcops (I) (Mean±SD)	Dabur (D) (Mean±SD)	Lab Preparation(L) (Mean±SD)
1	**Bulk Density**	**0.496gm/cc**	**0.520gm/cc**	**0.480gm/cc**
2	Tapped Density	0.484gm/cc	0.506gm/cc	0.472gm/cc
3	Angle of Repose	41o. 2'	40o. 4'	40o. 8'
4	Hausner Ratio	0.975	0.97	0.98
5	Carr's Index	19.20	19.40	20.12

Table 5: Organoleptic characters of three batches

S.No	Organoleptic characters	Impcops (I) (Mean±SD)	Dabur (D) (Mean±SD)	Lab Preparation(L) (Mean±SD)
1	Appearence	Powder	Powder	Powder
2	Colour	Pale Green	Pale Green	Pale Green
3	Taste	Slight Bitter	Slight Bitter	Slight Bitter
4	Odour	Pleasant	Pleasant	Pleasant

Table 6: Phytochemical Parameters of three batches

S.No	Phytochemical Parameters	Impcops (I) (Mean±SD)	Dabur (D) (Mean±SD)	Lab Preparation(L) (Mean±SD)
1	Alkaloids	**+Ve**	**+Ve**	**+Ve**
2	Cardiac Glycosides	**+Ve**	**+Ve**	**+Ve**
3	Carbo Hydrattes	**+Ve**	**+Ve**	**+Ve**

4	Steroids	**-ve**	**-ve**	**-ve**
5	Tannins	**+Ve**	**+Ve**	**+Ve**
6.	Proteins	**-ve**	**-ve**	**-ve**
7.	Terpenoids	**-ve**	**-ve**	**-ve**
8	Flavonoids	**+Ve**	**+Ve**	**+Ve**
9	Autho Cyanin's	**-ve**	**-ve**	**-ve**
10	Quinononeș	**+Ve**	**+Ve**	**+Ve**

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