

RESEARCH ARTICLE

Evaluation of Standardization Parameters for Asthi Sandhanak Lepa an Ayurvedic Formulation

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Received: 20th March, 2024; Revised: 18th July, 2024; Accepted: 13th August, 2024; Available Online: 31st August, 2024

ABSTRACT

Asthi Sandhanak Lepa is an Ayurvedic Formulation widely used in the form of herbal paste to treat fractures and dislocations and is applied externally for the treatment of the same. The formulation is also used to reduce pain and inflammation. In the present investigation, various standardization parameters, viz., morphological studies, physical characters and physicochemical studies of the raw material/herbs that are used in the preparation of ayurvedic formulation, were studied.

Keywords: Ayurveda, Lepa, Standardization parameters, Asthi sandhanak lepa, Herbs.

International Journal of Pharmaceutical Quality Assurance (2024); DOI: 10.25258/ijpqa.15.3.23

How to cite this article: Srivastava Y, Daniel K. Evaluation of Standardization Parameters for Asthi Sandhanak Lepa an Ayurvedic Formulation. International Journal of Pharmaceutical Quality Assurance. 2024;15(3):1247-1250.

Source of support: Nil.

Conflict of interest: None

INTRODUCTION

Medicinal plants (MP) are known for their uses by ancient man from time immemorial. Even in the present time, MP is used in its crude forms and the extracts obtained were also used in the treatment of several disorders. MP can be defined as plants possessing medicinal properties which can be used for traditional or allopathic healthcare systems. These plants may be found to be useful as food, cosmetics, aromatics and condiments.^{1,2}

Active phytoconstituents or phytochemicals are the bioactive compounds found in plants that provide health benefits and reduce the risk of chronic diseases. These phytochemicals are synthesized in plants to overcome stress conditions and to promote normal growth. When these phytochemicals are introduced into other organisms, they produce pharmacological changes, either good or bad in the organism.³⁻⁶ The Ayurvedic Formulation i.e., Asthi Sandhanak Lepa mentioned in

Rasatantra Sara, AFI, Vol. II, 9:1 was selected for the present study. This formulation in the form of herbal paste, used to apply externally to heal fractures and dislocations. It quickens the healing of fractures and calcification of bones. It helps to reduce pain and inflammation.⁷

MATERIALS AND METHODS

Collection and Verification of Herbs

The major ingredients of this AF are *Aloe vera*, *Commiphora myrrha*, *Boswellia serrata*, *Cyperus rotundus*, *Rheum emodi*, *Litsea chinensis*, *Fagonia cretica*, *Symplocos racemosa*, *Quercus infectoria*, Alum, *Curcuma amada* were used in the treatment of fracture, pain and inflammation were selected for the present study based on literature review. The herbs used were obtained from the local market of Kanpur, UP, India and after identification by the Botanist, the Voucher specimen no was allotted. J/Bot/ASL-10-20.

Table 1: Organoleptic characters of ingredients

S. No.	Name of ingredients	Part used	Color	Odor	Taste
1	<i>A. vera</i>	Leaves	Green	Astringent	Sweet
2	<i>C. myrrha</i>	Stem bark	Brown	Irritable	Bitter
3	<i>B. serrata</i>	Bark	Light brown	Pleasant	Slightly Bitter
4	<i>C. rotundus</i>	Rhizome	Light brown	Aromatic	Bitter
5	<i>L. chinensis</i>	Bark	Light brown	Characteristics	Bitter
6	<i>S. racemosa</i>	Bark	Light brown	Pungent	Bitter
7	<i>Q. infectoria</i>	Bark	Light brown	Slight	Strong Pungent
8	<i>C. amada</i>	Rhizome	Yellow	Characteristics	Sweet

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Standardization Parameters

Various sensory profiles, i.e., morphological studies, were carried out, such as color, odor and taste.⁸ The fresh herbs were dried and made to powder and the powdered plant materials were evaluated for their physical characteristics, i.e., micromeres studies as per the standard procedure mentioned.⁹ Physico-chemical studies were also carried out for the powdered plant material as per the procedure mentioned in Ayurvedic Pharmacopoeia.^{10,11}

RESULTS AND DISCUSSION

Various sensory profiles of the herbs were studied out and the results were mentioned in Table 1. Figure 1 shows the detailed



Figure 1: Photographs of ingredients

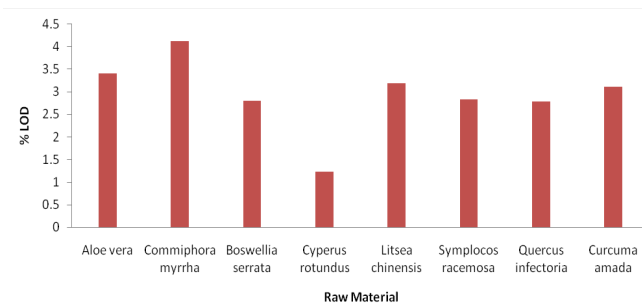


Figure 2: %LoD of raw materials

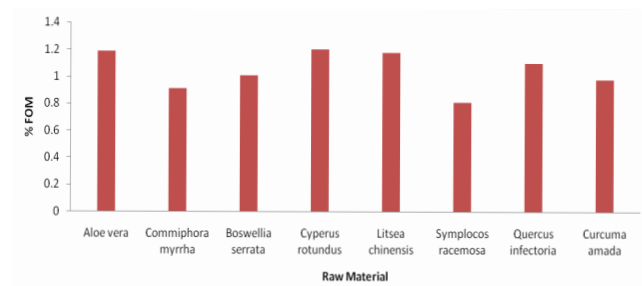


Figure 3: %FOM of raw materials

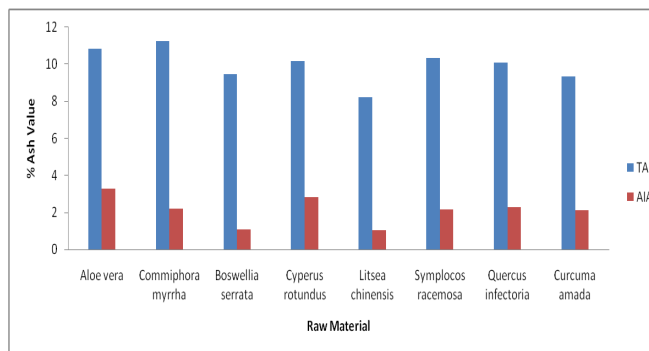


Figure 4: %TA and AIA of raw materials

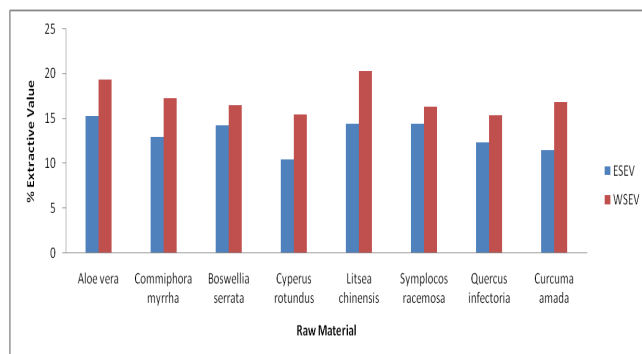


Figure 5: %Extractive values of raw materials

photographs of the plant part taken. In Table 2, results of physical characters and in Table 3, results of physicochemical parameters were presented. Figures 2 to 7 represent the results of various physic-chemical evaluations.

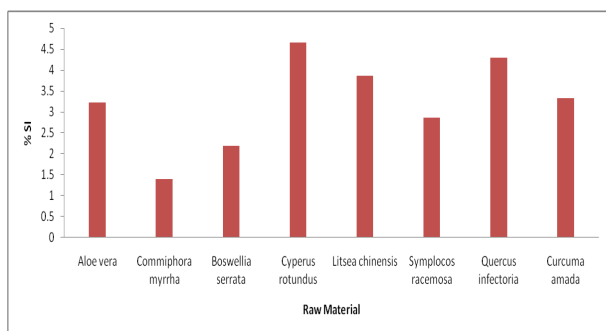
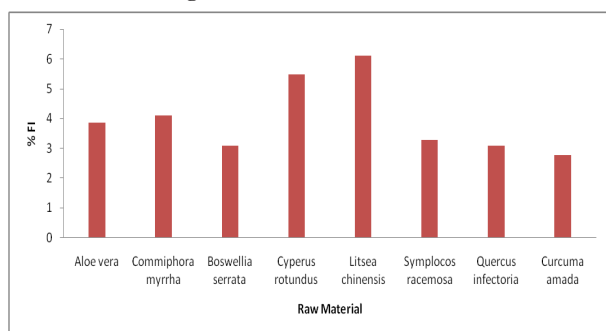
Table 2: Physical characteristics of raw materials

S.No.	Name	Tap density	Bulk density	Angle of repose	Hausner ratio	Carr's index
1	<i>A. vera</i>	0.581	0.623	20.98	0.893	10.12
2	<i>C. myrrha</i>	0.579	0.632	24.27	0.894	11.19
3	<i>B. serrata</i>	0.569	0.630	23.12	0.896	11.18
4	<i>C. rotundus</i>	0.588	0.619	23.42	0.878	11.04
5	<i>L. Chinensis</i>	0.583	0.628	22.92	0.894	10.94
6	<i>S. racemosa</i>	0.587	0.639	24.12	0.898	11.38
7	<i>Q. infectoria</i>	0.583	0.629	23.90	0.882	11.86
8	<i>C. amada</i>	0.583	0.649	23.62	0.898	11.32

Table 3: Physicochemical profile and characteristics of raw material

S. No.	Name	LOD	FOM	TA	AIA	ESEV	WSEV	SI	FI
1	<i>A. vera</i>	3.41	1.19	10.82	3.27	15.29	19.28	3.22	3.87
2	<i>C. yrrha</i>	4.13	0.91	11.24	2.19	12.94	17.25	1.39	4.11
3	<i>B. serrata</i>	2.81	1.01	9.47	1.10	14.22	16.47	2.19	3.10
4	<i>C. rotundus</i>	1.23	1.20	10.19	2.82	10.39	15.46	4.66	5.48
5	<i>L. chinensis</i>	3.19	1.18	8.21	1.04	14.36	20.23	3.86	6.10
6	<i>S. acemosa</i>	2.83	0.81	10.32	2.15	14.42	16.28	2.86	3.29
7	<i>Q. infectoria</i>	2.78	1.10	10.10	2.27	12.35	15.32	4.29	3.10
8	<i>C. amada</i>	3.12	0.98	9.35	2.10	11.46	16.83	3.33	2.77

Note: All reading are Mean, n=3

**Figure 6:** %SI of raw materials**Figure 7:** %FI of raw materials

CONCLUSION

Herbal formulations covered a wide range from solid to semisolid to liquid dosage forms. The most favored herbal formulations is solid and semisolid dosage form and has

captured a major share of the world market in ayurvedic formulations. Various standardization parameters like sensory characters, physical characters and physic-chemical evaluation of all the raw material used in the preparation of Ayurvedic Formulation Asthi Sandhanak Lepa were investigated out and were reported in the present study. The results obtained revealed that these are within the guidelines as prescribed.

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