

PHARMACEUTICO-ANALYTICAL STUDY OF LAGHUSUTA SHEKHARA VATI AND ITS MODIFICATION TO TABLET FORM WITH SPECIAL REFERENCE TO MARKET SAMPLE

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ABSTRACT

Laghusutashekhara rasa a very commonly used medicine, it was prepared as per the reference of Rasatarangini. The medicine is extensively prescribed for many of the pittaja disorders like sheetapitta, amlapitta etc with higher acceptance. Some of the commonly adopted tests to test the bioavailability of the tablet like Disintegration, Hardness, Friability, Weight variation, Particle size and stability studies were conducted after the preparation of Laghusutashekhara Rasa. It was noted that the vatis did not pass through the Disintegration and hardness tests. The time taken for disintegration was found to be high with unsatisfactory results with high hardness. As the absorption of the tablet is directly proportional to the time taken for disintegration and hardness, starch as disintegrator was added in three different proportions, by three different methods and tablets of 250mg were prepared. Later the tablets thus prepared were subjected to all the above said tests and the results were found to be very satisfactory. Tablets with addition of 10% starch powder was promising with greater acceptance, as the disintegration time had reduced, thereby increasing the bio availability and again to avoid weight variation conversion of vati to tablet form was found to be very advantageous.

Keywords: Gairika, Laghusutashekhara vati, Disintegration, friability, starch, bio availability.

INTRODUCTION

Rasashastra is the science of mercury. It is one of the most advanced branches of Ayurveda. Most of the formulations in Rasa Shastra contain Rasa and Gandhaka as common ingredients. There are few formulations which are devoid of Parada and Gandhaka and Laghusutashekhara rasa¹ is one such formulation. Gairika is one of the Uparasa and it is one of the chief ores of iron where in the percentage of Iron varies depending on the place of availability. The ingredients of Laghusutashekhara rasa are shuddha Gairika, shunti churna and

Nagavalli swarasa as bhavana dravya have been explained in Rasa Tarangini with a dosage of 1 – 2 ratti pramana for many of the pittaja disorders like sheeta pitta, udara, pittaja unmada² etc disorders. Laghusuta shekhara rasa was prepared as per the classical reference in the vati form and efforts were made to modify it into tablet form and subjected to analytical parameters. Hence parameters like disintegration, hardness, weight variation, friability were adopted for the present study.

METHODOLOGY

PHARMACEUTICAL WORK³

The ingredients for the preparation of Laghusutashekhara rasa are

Shuddha Gairika – 100 g

Shunti churna – 50 g

Nagavalli swarasa – Q.S

Procedure – Gairika was procured from the local market. It was purified by bhajana method using Goghrita. Purified gairika was mixed with shunti churna as per the proportion and given bhavana with Nagavalli swarasa then vatis of Laghusutashekhara rasa with 2 ratti pramana were prepared, dried under shade and stored in airtight container. Thus prepared vatis were subjected to analytical parameters.

Total quantity obtained – 170 g

CONVERSION OF VATIS INTO TABLETS

For the present study, Starch was used as a disintegrator in three different proportions and mixing with Laghusutashekhara rasa was done by three different methods.

Starch helps in the disintegration of the tablet within few minutes at concentrations of 3 – 15%W/W in powder form, 5 – 25%W/W in paste form in tablet granulation as a binder. By being inert with respect to the drug action, absorption and bio availability. Starch is widely used as an excipient primarily in the oral solid dosage forms where it is utilised as a binder, diluent and disintegrant. As the Hardness of the vati was high, percentage of starch used also more.

ADDING 12% of starch

The formulation was mixed with 12% of starch powder and the contents were mixed manually to get a homogenous mixture, the

medicine was compressed into tablets with a dosage of 250mg. Later the tablets were subjected to disintegration, friability and hardness. The results are tabulated.

As the vatis became very soft and failed to pass through friability, with a hardness of less than 1kg, 8% starch powder was added and tried for the same tests. Where in the disintegration was found to be high. Disintegration – 13mins

Though vatis passed through all other parameters except disintegration mixing the formula with 8% of starch paste was tried.

PREPARATION OF STARCH PASTE⁴

Starch - 0.16gms, water – 10 times.

The ingredients were taken in a khalwa and were mixed uniformly. Later it was heated to get a slurry consistency. This paste was mixed with 2.5gms of Laghusutashekhara rasa thoroughly and dried. The mixture was later passed through 20 no mesh, granules were prepared, 250mg was weighed and compressed and were subjected to the above said parameters. The results were found to be very satisfactory.

Disintegration – 6mins

Hardness - 2kgs

Relatively better than previous preparations. But involves the preparation of starch paste, which is again time consuming hence to reduce the time involved, and to make it a relatively simpler preparation the tablets were tried with 10% starch powder.

Here again the formulation was mechanically mixed with 10% starch powder and tablets of 250mg were compressed.

-Disintegration – 3mins

-Hardness – 3kgs

-Friability – pass

-Weight variation – pass

ANALYTICAL PARAMETERS⁵

Prepared vatis of Laghusutashekhara Rasa were subjected to the tablet parameters such as

-Disintegration

-Friability

-Hardness

-Weight variation

-Particle size

-Stability studies

RESULT

Table 1: Showing all the values with different Proportions of Starch

Quantity Of Starch Used	Disintegration	Hardness	Friability	Wt Variation
12 %	6mins	1kg	Did not pass	Passes
8%	13mins	6kgs	Passes	Passes
10%	3mins	3kgs	Passes	Passes
8% Starch paste	3mins	3kgs	Passes	Passes

Table 2: Showing Comparison of L.S.S. Rasa in Tablet form with Market Sample

Physical Appearance	L.S.S Rasa Tablets With 10% Starch Powder	Market Sample
Colour	Reddish brown	Reddish brown
Texture	Smooth	Smooth
Surface	Smooth	Not continuous
Diameter	1cm	8mm
Thickness	2mm	2mm-periphery,4mm-cen
Disintegration	3mins	13min(average of 3 tabs)
Hardness	3kgs	3kgs

Table 3: Stability studies of the Tablet

Temp(degree centigrade with % RH)	TIME (Days)	Hardness Kg/Cm ²	Disintegration (Mins)	Appearance
25 +_ 2deg C/60% RH	0 – day	3.0+_0.15	Less than 3	NCC
30 +_ 2 deg C/ 65% RH	30 – days			
	60 – days			
	90 – days			

RH – Relative Humidity; NCC-No Characteristic Change

DISCUSSION

Though a widely used and prescribed medicine such as Laghusutashekhara Rasa when subjected for simple tablet parameters such as Disintegration and Hardness, the basic tests a tablet has to pass through in

order to show its quicker action by being absorbed within a short duration of time was found to be too high. Addition of starch powder as disintegrator was tried with various proportions such as 8%, 10%, 12% and were again subjected to the above said

parameters. When 12% starch powder was used the hardness was found to be too less with just 1kg where the tablets are damaged during the process of packing itself. In order to increase the hardness 8% starch powder was tried where the disintegration time was not encouraging with a value of 6mins. Normally a tablet has to get disintegrated within 5mins. As the difference observed was very less an effort was made to add the same proportion of starch but in paste form. Though it is a slightly time consuming procedure it was tried with satisfactory results. Further to cut short the preparation of starch paste in the granule form and to avoid any amount of moisture content in the preparation for increasing the stability time and shelf life again adding 10% starch powder was tried and it was found to be the best among all with most acceptable values.

CONCLUSION

Laghusutashekhara rasa is a simple preparation with few ingredients having wide utility clinically was selected for the present analytical study. Vatis prepared with weight of 250mg with starch powder of 10% and starch paste of 8% were found to be very satisfactory. Further different vatis, gutikas, rasa yogas may be tried with such parameters and necessary changes can be made to make them quicker by reducing the disintegration time and hardness.

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TABLETS OF L.S.S. RASA

