

ROLE OF MERCURY IN SVARNA VANGA PREPARATION

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ABSTRACT: *Svarna Vanga, an important Ayurvedic tin preparation having mercury as one of its ingredients, is mainly indicated in the treatment of Pramehas (genitourinary disorders). What role does mercury play in its preparation is not known. Hence present study has been planned with a view to prepare SvarnaVanga using mercury in different amounts. It was observed that the amount of mercury atleast in half proportion to in tin Kajjali, is considered necessary in making the standard Svarna-Vanga preparation.*

Introduction:

'Swarna Vanga' is a well known Ayurvedic 'tin' preparation mainly indicated in the treatment of mutravaha and sukravaha srotas (urogenital systems) diseases. It's beautiful shining, golden colour influences both the physician and the patient. As per textual references it is type of 'Vanga Bhasma' prepared with the help of mercury.

Modern chemistry describes a compound of tin names stannic sulphide (mosaic gold) which is almost similar to swarnavanga in physical and chemical natures. Some of the modern chemistry books have not advised the addition of mercury while preparing stannic sulphide (mosaic gold) but in Ayurvedic text inclusion of Hg is necessary. So the present study was planned to find out the role of Hg proportion of swarna vanga according to Ayurvedic concept the bhasma of any metal, if prepared by addition of mercury is considered the best.

The objective of the study was to assess that to in which preparation mercury can be reduced without affecting the characteristics and other standards of the final product to the best of our knowledge no such work has been carried out so far.

Material and Method:

Materials for 'Swarna vanga' -

1. Suddha vanga (tin)
2. Suddha Parada (mercury)
3. Suddha Nausadar (ammonium chloride)
4. Suddha gandhaka (sulphur)
5. Suddha kalmi shora (pot. Nitrate).

Four samples of swarna vanga (X,Y,Z & XY) were prepared using above ingredients in different proportions in our depart mental laboratory. In sample 'X' ingredients 1-4 were in equal amounts and kalmi shora being 1/10th to tin. In samples 'Y', 'Z' and 'XY' all the ingredients were taken in equal amounts

except mercury which was taken in 1/2nd, 1/4th and 1/6th ratio to tin respectively. All were prepared by kupipaka method as described in Ayurvedic texts.

All the four samples (X, Y, Z & XY of 'Swarna Vanga' were analysed for the estimation of their main constituents qualitatively and quantitatively following the standard chemical analytical techniques.

Observation:

It was observed that-

1. All the samples of the drug required 6/7 – 12 hours active heating.
2. The temperature range during experiment was maintained between 200-320oC

- a) Initially upto 200oC for 2-3 hrs and then
- b) Upto 320oC for 5-8 hrs.
No strong heating is necessary in this case.
3. The physical characteristics of the final product (Swarna vanga) showed diminishing character i.e. from bright golden (gini gold) to dull golden colour in 'X' to XY' samples.
4. The percentage yield of svarna vanga in sample 'Y' and lowest in sample 'Z'
5. On chemical analysis the percentage of tin was found increasing in 'X' to 'XY' samples while the percentage of Hg. Free and total sulphur were found decreasing.

Result:

TABLE – I

Percentage yield of 'Swarna vanga' with respect to tin in Kajjali.

Sample	Tin in Kajjali (gms)	Average Swarnavanga yield (gms)	Percentage of Swarna vanga yield
'X'	48.28	58.00	120.95
'Y'	55.55	67.66	121.95
'Z'	59.70	66.33	111.11
XY'	61.22	68.66	112.15

TABLE –I**Percentage of main constituents of swarna vanga in different samples.**

Sl. No	Sample	Tin%	Hg%	Total Sulphur%	Free Sulphur%
1	'X'	46.41	1.03	28.28	10.88
2	'Y'	53.25	0.81	24.50	8.24
3	'Z'	58.82	0.63	27.29	7.98
4.	XY'	61.56	Not estimable (traces)	25.97	7.50

Discussion:

While assessing the role of mercury in svarna vanga preparation following points should be kept in mind-

1. Percentage yield of svarna – vanga
2. Physical characteristics of Svarna vanga
3. Percentage of the constituents in svarna vanga.

The sample of svarna vanga which was prepared by using half the amount of Hg. To tin showed the highest percentage of yield while in the other samples, where Hg was used in 1/4th and 1/6th the amount of tin, the percentage yield was minimum.

In the same way the physical characteristics were also found diminishing in proportion to the ratio of mercury. The diminishing physical characteristics and the difference in percentage yield of svarna vanga may be accounted for the varying ratio of mercury added in various samples.

It is evident from these finding that mercury in the ratio of equal amount or half to tin is necessary to obtain a superior/standard quality of svarna- vanga. As in the samples where equal and half Hg to tin was added , there was neither any significant differences in percentage yield of the product nor in the physical characteristics, rather the percentage yield was found highest in sample 'Y'. Hence, the sample 'Y' may be considered as an ideal product and its cost is also low due to the addition of less Hg. The products where Hg is taken in 1/4th and 1/6th ratio, the yield of final product was less as compared to the first two samples. There golden colour and shining were also much less. This proves that mercury plays an important role in reducing the particle size of tin and exposing higher surface area of tin metal to react with the other ingredients (sulphur etc.) and thus increasing the percentage yield and physical characteristics.

The results of the chemical analysis also support the above views as the percentage of tin is found increased in the samples where mercury is used in lower ratio which means mercury in such ratio is not sufficient to reduce tin completely and leaving some particles of tin unreacted. The physical characteristics of different samples of svarna vanga may also be correlated with the above view points as in first two samples the particles of svarna vanga were found to be very fine and very shining while in last two samples their size was found bigger and bigger and shining was lesser and lesser.

Conclusion:

On the basis of above findings it is evident that mercury plays an important role in the preparation of svarna vanga. The minimum proportion of mercury required for obtaining a standard product (svarna- vanga) is half to tin.

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