



**COMPARATIVE HEAVY METAL ANALYSIS AND MICROBIAL OVERLOAD STUDY OF SANJIVANI VATI PREPARED FROM TWO DIFFERENT MEDIA FOR SHODHANA OF VATSANABHA**

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**ABSTRACT**

**Introduction:** *Sanjivani Vati* is polyherbal formulation. It has two *Visha* present into it which are *Vatsanabha* and *Bhallataka*. *Ashuddha Vatsanabha* (*Aconitum Chasmanthum* Stapf Ex Holmes) is very toxic in nature. For therapeutic use, *Vatsanabha* can be use after *Shodhana* only. In this study, two different kind of media (*Gomutra* & *Godugdha*) were taken to purify *Ashuddha Vatsanabha*. And after that two different batches of *Sanjivani Vati* (SVA- by using *Godugdha Shodhita Vatsanabha* Powder and SVB- by using *Gomutra Shodhita Vatsanabha* Powder) were prepared. Now, to see any changes after *Shodhana* as well as comparison of two media were done. For that, we have compare the Heavy metal analysis and Microbial Overload to know the presence and comparison between both batches of *Sanjivani Vati*. **Material and Methods:** Principle of Heavy metal analysis & Microbial Overload, Instruments and steps involved in procedure using specify techniques. **Results and observation-** Both the samples were observed and resulted into the range of standard limits. **Discussion-** Both the samples SVA & SVB, in table 1 and table 2 showed the permissible and acceptable limit which indicates safety aspect. **Conclusion-** Both the Samples of *Sanjivani Vati* showed the value in permissible limit in Heavy metal analysis and acceptable range of microbial overload. In comparison, to both the samples SVA sample prepared by using *Godugdha* media showed more less value in both parameters than *Gomutra* media. But the range value of both samples for the study indicates the safety and acceptability for further use.

**KEYWORDS:** In this study, two different kind of media (*Gomutra* & *Godugdha*) were taken to purify *Ashuddha Vatsanabha*.

**INTRODUCTION**

*Sanjivani Vati* is polyherbal formulation. It has two *Visha* present into it which are *Vatsanabha* and *Bhallataka*. *Ashuddha Vatsanabha* (*Aconitum Chasmanthum* Stapf Ex Holmes) is very toxic in nature. For therapeutic use, *Vatsanabha* can be use after *Shodhana* only. In this study, two different kind of media (*Gomutra* & *Godugdha*) were taken to purify *Ashuddha Vatsanabha*. And after that two different batches of *Sanjivani Vati* (SVA- by using *Godugdha Shodhita Vatsanabha* Powder and SVB- by using *Gomutra Shodhita Vatsanabha* Powder) were prepared. Now, to see any changes after *Shodhana* as well as comparison of two media were done. For that, we have compare the Heavy metal analysis and Microbial Overload to know the presence and comparison between both batches of *Sanjivani Vati*. Heavy metal analysis indicates the presence or absence of heavy metals or otherwise if present upto permissible limit. Microbial overload

indicates the presence of microbes which can help to get the result for safety, shelf life and amount of presence of moisture into it. In this study, an attempt was done to get the results for *Sanjivani Vati* both samples as well as comparison between them.

**MATERIAL AND METHODS**

**1. Heavy metal analysis- By ICP-OES**

Instruments: ICP-OES Inductive Coupled Plasma Optical Emission Spectrometer

Make: Perkin Elmer Model: Optima 3300 RL

Reagents: Deionised water, resistivity > 18.2M ohm cm

Metal stock solution 100mg/L Multi std.CPA Ltd.

Bulgeria and 1000 mg/L Multi std.VHG Lab.USA

Hydrochloric acid, 37% GR, Merck

Nitric acid, 69% GR, Merck.

**Sample Preparation**

For acid digestion of sample, take 1gm sample and add 10ml of Aquaregia (HCL (3): HNO<sub>3</sub>(1) solution in a closed vessel, followed by heating on plate. Allow it to cool, filter the solution into 25 ml volumetric flask and make up by deionized water up to mark. Prepare blank in similar way.

**Analysis**

Calibrate using the blank and standard and then analyze blank and sample solution.

**Calculation of Sample**

$$\text{mg/kg (ppm) in sample} = \frac{\text{ppm in solution} \times 25}{\text{Weight of sample (g)}}$$

**2. Microbial overload**

Culture medium was prepared by following method

**Table no. 1: Showing results for Heavy metal analysis in Sanjivani Vati (SVA & SVB).**

Sr. No.	Heavy metal	SVA	SVB	Permissible limits
1	Lead (Pb)	8.431 ppm	9.292 ppm	10 ppm
2	Cadmium (Cd)	0.044 ppm	0.044 ppm	0.3 ppm
3	Mercury (Hg)	0.957 ppm	0.924 ppm	1 ppm
4	Arsenic (As)	1.077 ppm	1.364 ppm	3 ppm

ppm-parts per million.

**Table no. 2: Showing results for Microbial Overload in Sanjivani Vati (SVA &SVB).**

Sr. No.	Parameters	Sanjivani Vati		Permissible Limits
		SVA	SVB	
1	Total Microbial Plate count (TPC) (cfu/g)	129	146	NMT 10 <sup>5</sup> cfu/g
2	Total Yeast and Mould count(cfu/g)	24	35	NMT 10 <sup>3</sup> cfu/g
3	Staphylococcus Aureus	Absent	Absent	Absent
4	Salmonella spp.	Absent	Absent	Absent
5	Pseudomonas aeruginosa	Absent	Absent	Absent
6	Escherichia coli	Absent	Absent	Absent

cfu/g-colony forming unit per gram.

**DISCUSSION**

In Table 1, the Heavy metal analysis for both the samples indicates the range of all four heavy metals Pb,Cd, As, Hg into permissible limits. To compare SVA and SVB, SVA showed more less value than SVB. In Table 2, the Microbial Overload for both the samples indicates the range of all parameters into acceptable limits. To compare SVA and SVB, SVA showed more less value than SVB. So after this result, we can assume that if we use *Godugdha* media compare to *Gomutra* can give more significantly effects in safety aspect of *Sanjivani Vati*.

**CONCLUSION**

Both the Samples of *Sanjivani Vati* showed the value in permissible limit in Heavy metal analysis and acceptable range of microbial overload. In comparison, to both the samples SVA sample prepared by using *Godugdha* media showed more less value in both parameters than *Gomutra* media. But the range value of both samples for

As per requirement weighed solid ingredients was dissolved in appropriate distilled water and agar (For bacteria-Mac conkey Agar / For yeast and mould - Sabroud's Agar was added. The solution was heated and final volume was made and the medium was distributed in flasks and sterilized by autoclaving at 121<sup>0</sup>C for 15min. In the sterilized area, the solution was poured into plates and kept for cooling. After that, weighed samples spreaded on plates in sterilized area. Plates were kept downwards. Plates were observed after 24h for bacteria and 36 to 48 h for yeast and moulds.

**RESULTS AND OBSERVATION- SVA-** by using *Godugdha Shodhita Vatsanabha* Powder.

**SVB-** by using *Gomutra Shodhita Vatsanabha* Powder.

the study indicates the safety and acceptability for further use.