

Heavy Metal Analysis of Velvanga Parpam by ICP-OES

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ABSTRACT

Introduction: Siddha system of medicine is an ancient health system. Velvangam is one of the metal used in siddha system. Velvanga Parpam is one among them used for the treatment of diseases like diabetes mellitus, respiratory infections and etc.

Aim: The main aim of the study is to analyze the heavy metals in the specific preparation of Velvanga Parpam.

Materials and Methods: The Drug Velvangam is purified and prepared as medicine as per siddha text. MP is subjected to ICP-OES analysis in the instrument Perkin Elmer optima 5300DV.

Result: The result indicates the presence of the elements Phosphorus and Tin. Tin has its highest concentration of 441.210mg/L.

Discussion: It proves that a Parpam is mainly composed of the element Tin and phosphorus .

Conclusion : This concludes that, the Velvanga Parpam is free from heavy metals and safer for human consumption. Mainly composed of the element TIN. Further studies on Velvanga Parpam is needed to strengthen its safety and efficacy.

KEYWORDS

Velvanga Parpam (VP), ICP-OES , Tin

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INTRODUCTION

Siddha system of medicine is an ancient health system. Basic principles of Siddha system of medicine are Mukkutram, pancha bootham and udal kattukkal. Modes of siddha treatment include 32 types of internal medicines and 32 types of external applications. Those types of medicine are obtained from many sources such as herbals, animals and minerals. Velvangam is one of the metal used in siddha system. It is also known as Tin, Stannum. Various preparations of velvangam was mentioned in siddha literatures. Velvanga Parpam is one among them used for the treatment of diseases like diabetes mellitus, respiratory infections and etc. This study aimed at analysing the heavy metals present in the specific preparation of Velvanga Parpam.

AIM

The main aim of the study is to analyze the heavy metals in the specific preparation of Velvanga Parpam.

MATERIALS AND METHODS

PREPARATION OF VELVANGA PARPAM :

All the above ingredients are purified, Paruthi kottai (cotton seeds) are crushed, powdered and then spreaded for 1 ½ saan width in a thick silk cloth then purified velvangam (stannum, Tin) is melted and beaten to fine thin sheet. This thin sheet of velvangam is placed on the those dried cotton seed powder and covered up again with those cotton seed powder. Now role the silk cloth into medicated thread and tie it's both ends .Then ignite the both ends and cover it with 4,5 varatti and

burnt it, when it is burnt down completely, the fine parpam of velvangam is powdered for further usage. The above prepared Velvanga Parpam is subjected to ICP-OES analysis for the presence of heavy metals in it.

Instrumental Analysis with Inductively Coupled Plasma Optical Emission Spectroscopy – ICP-OES:

ICP-OES is an instrument widely used for the analysis of the heavy metals and trace elements in the samples in both Qualitative and quantitative manner.

Working Principle of ICP-OES:

When plasma energy is given to the sample from outside. The elements (atoms) in the components of samples are excited and the excited atoms return to its low energy position. In the mean time it emits rays (spectrum rays) and the emission of rays that correspond to the photon wavelength are measured. The element type is determined based on the position of the photon rays, and the content of each element is determined based on the rays' intensity.

ICP-OES analysis of VP:

0.5 gram of Velvanga Parpam sample is dissolved in 10 ml of Nitric acid and the Solution is taken in a decomposition vessel. Analysis is done in the instrument PERKIN ELMER OPTIMA 5300 DV.

RESULTS

Inductively Coupled Plasma Optical Emission Spectroscopy-ICP OES analysis result of Velvanga parpam.

Table 1: ICP-OES result analysis of VELVANGA Parpam

ELEMENTS	ELEMENTS SYMBOL	WAVE LENGTH(nm)	CONCENTRATION
Aluminium	Al	396.152	BDL
Arsenic	As	188.979	BDL
Carbon	C	193.030	BDL
Calcium	Ca	315.807	BDL
Cadmium	Cd	228.802	BDL
Chlorine	Cl	725.670	BDL
Copper	Cu	327.393	BDL
Iron	Fe	238.204	BDL

Mercury	Hg	253.652	BDL
Lead	Pb	220.353	BDL
Phosphorous	P	213.617	46.301mg/L
Sulfur	S	180.731	BDL
Tin/Stannum	Sn	189.926	441.210mg/L

BDL: Below Detection Limit

The result indicates the presence of the elements Phosphorus , Tin And the absence of Heavy metals such as Arsenic. Mercury, Cadmium, Copper, Zinc, and Lead .

DISCUSSION

Of these the element Tin has its highest concentration of 441.210mg/L. It proves that Velvanga Parpam is mainly composed of the element Tin. The Phosphorus concentration of Velvanga Parpam is 46.301mg/ L.

The heavy metals namely Mercury, Arsenic, Copper, Zinc. Lead. Cadmium were absent in the medicine Velvanga Parpam Hence the medicine is free from heavy metals and this Safe for consumption.

CONCLUSION

The Siddha Medicine Velvanga Parpam is thus prepared and subjected to instrumental analysis. The heavy metals and trace elements were analyzed in Inductively Coupled Plasma Optically Emission Spectroscopy instrument namely PERKIN ELMER OPTIMA 5300 DV. The result indicates the presence of the elements phosphorus, Tin and the absence of heavy metals like mercury , arsenic , lead and cadmium.

This concludes that, the Velvanga Parpam is free from heavy metals and safer for human consumption. Mainly composed of the element TIN. Further studies on Velvanga Parpam is needed to strengthen its safety and efficacy..

CONFLICT OF INTEREST: None

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