

Physio-Chemical Evaluation and Toxicological Studies of Herbomineral Preparation (Rasachendooram)

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ABSTRACT

Siddha medicines have now found themselves in a whirlwind of controversy. There is a need for testing methods to prove the safety and efficacy of the age old system of Indian medicine. So, the study was designed to analysis physio-chemical, Acute oral toxicity of heavy metals by using Albino Wister rates. Marketly available rasachendooram was studied and the study report found there was no significant difference between Drug treated animals compared with Control Drug. The study revealed that the preparation as complaints the Standards of Ayurvedic Pharmacopeia and elemental analysis shows that all pure metal Fe, Cd, Co, Ni, Pb present in test material. Acute and Subacute toxicity studies Indicates that there is no harmful materials present in Rasachendooram.

Keywords: Indian medicine, Rasachendooram, Wister Albino rates. .

INTRODUCTION

Siddha system a branch of Indian medicine is said to be as ancient as the Tamil language itself. Unlike opher system of Indian medicine, Siddha system includes a number of minerals, metals and animal products in the same manner as that of Herbs.

Mercury is considered as a deadly poison is made into a life saving medicine .Siddha medicine using various purification methods such as grinding with fruit juice and thermal process. However, Siddha medicines have now found themselves in a whirlwind of controversy. First was the Journal of the American Medical Association (JAMA-2004) reported on heavy metal content in Siddha medicines. It has reported that the Siddha Herbometallic preparations sold in Boston areas were found to contain unacceptably high heavy metals content and over the counter herbs and supplements with high levels of heavy metals are simply dangerous. So, there was a need for analytical testing methods to prove the safety and efficacy of the age-old system of Indian medicine.

Objective

The present study was designed to analysis the bphysio-chemical properties and Acute oral Toxicities of Heavy metals containing Preparations like "Rasachendooram" in Albino rats by using OECD- guidelines.

Material and Methods

Physio-Chemical Evaluation

The test drug was purchased from local market and tested for Physic-chemical Evaluation like Loss on drying, Ash value, Acid Insoluble ash value, Water soluble ash value, PH-value, and the results were presented in Table: 1.

Table 1: Physio-chemical Evaluation

S.NO	EXPERIMENTAL ANALYSIS	VALUES.
1.	Loss on drying at 105°C	0.1822%
2	Total ash value	96.50%
3	Acid insoluble ash	6.2405%
4	Water soluble ash	2.50%
5	PH	7.85

Elemental Analysis

The Standard solutions, reagents and Chemicals were purchased from E-MERK Company. Working standard reagents and Samples were prepared by using De ionized water. Glassware were soaked in 3% HCL and rinsed with demonized water. Atomic absorption spectrometer(Perkin-1400/HGA 900)specific hallow cathode lamp was used as light source for analysis of Fe, Cu, Mn, Zn, Ni, Co, Cr. Specific electrode less discharge lamp were used for the analysis of Hg, Cd, As, and Pb. The digest liquid sample solution was subjected to analysis for Fe, Cu, Mn, Ni, Co, Hg, Pb, and As. In Atomic absorption spectra flame with specified instrumental conditions given by instrument manufacturer. The results were given in Table: 2

Table 2: Elemental Analysis by Atomic Absorption Spectra

METAL / ELEMENT	W.H.O. LIMIT (UNITS IN P.P.M)	RASA CHENDOORAM. (UNITS IN P.P.M)
Fe	26	40
Cu	15	0.82
Mn	6	1.2
Zn	15	12
Ni	10	0.2
Co	1	0.42
Cd	0.3	0.0047
Pb	10	0.66
Hg	1	0.6
As	10	0.9

Toxicological Studies

Non-pregnant, 6 – 8 weeks old, female albino rates were selected and temperature, humidity, light intensity are maintained as per OECD guidelines. Albino wister rates were feed with brown pellet and RO system water. The dose administered by ball tipped stainless steel feeding needle and monitored for 4 hrs after dosing for signs and symptoms and were studied for mortality and any change in food and water consumption. Clinical observations was carried out by one way ANOVA, Dunnett test(parametric method) and the results were tabulated in

Table 3: Clinical Observations

S.NO	CLINICAL ASSESSMENT	MALE				FEMALE			
		CONTROL	LOW	MEDIUM	HIGH	CONTROL	LOW	MEDIUM	HIGH
1.	Motor co-ordination	8.9±1.9	9.0±2.2	8.0±2.1	8.3±1.7	9.6±1.9	9.5±0.6	8.9±0.9	7.9±2.1
2	Locomotor activity.	133.4±12.5	131.4±9.7	136.4±12.3	124.0±15.5	117.0±23.1	129.4±5.8	137.6±9.8	116.2±18.6
3	Righting reflex	1.1±0.2	1.1±0.2	1.2±0.3	1.2±0.2	1.0±0.2	1.2±0.4	0.7±0.2	1.1±0.3
4	Pinna reflex	2.0±0.8	2.3±0.8	2.3±0.6	2.4±0.5	2.0±0.7	2.1±0.4	2.4±1.1	2.3±0.7
5	Tail flick latency	0.8±0.4	0.6±0.5	0.7±0.4	0.7±0.4	0.5±0.1	0.7±0.4	0.7±0.5	0.7±0.4
6	Tail pinch response.	0.6±0.1	0.6±0.1	0.6±0.1	0.7±0.1	0.5±0.0	0.5±0.1	0.6±0.1	0.7±0.1
7	Sound response.	0.8±0.2	0.6±0.1	0.6±0.2	0.7±0.2	0.6±0.1	0.5±0.1	0.6±0.2	0.6±0.1
8	Visual stimulai response.	1.8±0.5	1.6±0.4	1.6±0.2	2.1±0.6	1.9±0.4	2.1±0.7	1.9±0.6	2.3±0.8

On 28th day animals were sacrificed and LD-50 value was established and Biochemical examination was carried out and the results were tabulated in Table :4 & 5 .

Table 4: Biochemical Examinations (Male)

Sex	Group	Days	Random Glucose mg/dl	Serum creatinine mg/dl	Serum SGOT	Serum SPOT
Male	Control	O day	73.34±12.21	1.3 ±0.34	22.22±3.42	29.09±1.21
		28 th day	73.27± 14.37	1.2 ±0.2	21.63±5.51	30.13±1.21
	T.D	O day	88.01 ±12.15	1.36 ±0.31	19.56±5.34	28.99±5.64
		28 th day	87.77 ±14.15	1.333 ±0.23	20.87±7.08	29.03±5.58
	T.DX5	O day	81.8±31.48	1.56 ± 0.42	35.67±9.89	39.98±9.61
		28 th day	82.8±29.48	1.5 ± 0.2	36.613±10.39	40.40±9.61
	T.DX10	O day	91.43±8.53	1.42 ± 0.2	29.97±12.42	34±15.32
		28 th day	91.75±9.12	1.1±0.28	30.95±14.26	34.95±14.17

Table 5: Biochemical Examinations (Female)

Sex	Group	Days	Random Glucose mg/dl	Serum Creatinine mg/dl	Serum SGOT	Serum SPOT
Female	Control	O day	74.04±11.21	1.3 ±0.34	22.22±3.42	29.09±1.21
		28 th day	73.27± 14.37	1.2 ±0.2	21.63±5.51	30.13±1.21
	T.D	O day	86.01 ±12.15	1.36 ±0.31	19.56±5.34	28.99±5.64
		28 th day	88.77 ±14.15	1.333 ±0.23	20.87±7.08	29.03±5.58
	T.DX5	O day	81.8±31.48	1.56 ± 0.42	35.67±9.89	39.98±9.61
		28 th day	82.8±29.48	1.5 ± 0.2	36.613±10.39	40.40±9.61
	T.DX10	O day	91.43±8.53	1.42 ± 0.2	29.97±12.42	34±15.32
		28 th day	91.75±9.12	1.1±0.28	30.95±14.26	34.95±14.17

RESULTS and DISCUSSION

Proprioception is the sense of position and movement of the limbs and the sense of muscular tension. In this study, all the drug treated animals returned legs to original position indicates that all the animals were normal. Motor co-ordination addresses the cross-motor skills such as walking, running, Climbing, Jumping, etc. Rota-rod apparatus were used to assess the motor Co-ordination and there was no difference in fall in time of the drug treated animals showed normal when compared to control. The study found there was no significant difference between drug treated animals compared with Control.

CONCLUSION

The study revealed that the preparation as complaints the standards of Ayurvedic Pharmacopea and elemental analysis shows that all pure metal Fe, Cadmium, Cobalt, Nickel, Lead present in test material. Acute and sub acute toxicity studies shows that, there is no harmful materials present in Rasachendooram.

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