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TO EVALUATE THE PHYSICOCHEMICAL PARAMETER AND HPTLC STUDY OF *SWARNA PRASHANA* AND *MADHU-GHRITA PRASHANA*

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ABSTRACT

Introduction: *Swarna Prashana* is a unique practice of gold licking mixed with honey and ghee in Neonates for health promotion and disease prevention described in Ayurveda. In the present study, the *Swarna Prashana* prepared from *Swarna Bhasma*, *Madhu* and *Ghrita* and *Madhu-Ghrita Prashana* were subjected to drug stability test with respect to physiochemical parameters and HPTLC. Acharya Kashyapa has described the unique concept of *Lehana* (licking of pure Gold with honey and ghee) in which the practise of administration of processed gold in neonates (*Navajata Shishu*) is mentioned as "*Swarna Prashana*". Various *Acharyas* mentioned different *Lehanas* for the newborn mainly they are the combination of the *Ghrita, Madhu* and *Swarna. Acharya* Charaka, mentioned only mixture of *Ghrita* and *Madhu.* Present study is carried out in to evaluate the possibilities of using *Swarna Prashana* and *Madhu-Ghrita Prashana* which will help sustainable utilization. *Swarna Parshana* and *Madhu-Ghrita Prashana* basic physicochemical analysis and high performance thin layer chromatography (HPTLC). **Aim and Objective:** To evaluate physicochemical parameters of *Swarna Prashana* and *Madhu-Ghrita Parashana*. **Materials and Method**: The classical *Ayurvedic* texts, internet and Scientific Journals. **Result:** Physico-chemical analyses were carried out by following the parameters. The common parameters were mentioned for Ayurvedic Pharmacopeia of India and CCRAS guidelines Physico-chemical analysis like loss on drying at 110°C, pH value, ash value, water soluble extractive, methanol soluble extractive were recorded. **Conclusion:** The

physico chemical analysis of *Swarna Parshana* and *Madhu-Ghrita Prashana* confirmed the purity and genuinely of the drug.

KEYWORDS: HPTLC profile, *Madhu-Ghrita Prashana*, Physicochemical analysis, *Swarna Prashana*.

INTRODUCTION

The newborn immune system has limited ability to mount an effective response from the quantitative and qualitative point of view against invasive pathogens implying more susceptibility to infection.[1]

Newborns have the highest risk of death among all children. It is a period in which majority of infant illness and death occurs.[2] A baby's immune system is not fully developed until he/she is about six months old, thus more prone to infections than in adults.[3] Thus a healthy immune system is very important for the maintenance of health and the prevention and recovery of diseases. If proper precautions are taken, many of these diseases can be prevented. Acharya Kashyapa has described the unique concept of *Lehana* (licking of pure Gold with honey and ghee) in which the practise of administration of processed gold in neonates (*Navajata Shishu*) is mentioned as "*Swarna Prashana" Medha-Agni-Bala Vardhanam* (improvement of intellect, digestion, metabolism, immunity, and physical strength), *Ayushyam* (Promoting lifespan), *Mangalam* (Auspicious), *Punyam* (Righteous), *Vrishyam* (Strength), *Varnyam* (Enhancement of color and complexion), *Grahapaham* (Protection from evil spirits and microorganisms).[4] Various *Acharyas* mentioned different *Lehanas* for the newborn mainly they are the combination of the *Ghrita, Madhu* and *Swarna. Acharya* Charaka, mentioned only mixture of *Ghrita* and *Madhu.*[5] Reports of toxicity study of *Swarna Bhasma* have proven it to be safe for internal administration in clinical medicine from the biological safety point of view.[6] Present study is carried out in to evaluate the possibilities of using *Swarna Prashana* and *Madhu-Ghrita Prashana* which will help sustainable utilization. *Swarna Parshana* and *Madhu-Ghrita Prashana* basic physicochemical analysis and high performance thin layer chromatography (HPTLC).

MATERIAL AND METHODS

DRUGS MATERIAL

Swarna Bhashma was prepared in RSBK Department of IPGT & RA, Gujarat Ayurved University, Jamnagar under expert guidance. Ghee was purchased from the standard local

market which was of AGMARK authentication. "A" grade Honey was purchased from Gujarat State Forest Development Corporation Ltd., Jamnagar.

INSTRUMENTATION

A CAMAG HPTLC system (Muttenz, Switzerland) equipped with an automatic TLC applicator Linomat V, twin trough plate development chamber, win CATS software (v1.2.1 Camag). And Hamilton (Reno, Nevada, USA) Syringe (100 µl).

MATERIAL AND REAGENTS

All chemicals, reagents and solvents used during the experimentation were of analytical grade.

Preparation of the drug

Swarna Bhasma prepared by following standard protocol in RSBK Dept. *Madhu* & *Ghrita* has taken in unequal quantity in 4:1 ratio to form drop consistency. *Swarna Bhasma* has been triturated with *Madhu* & *Ghrita* for 8 hours until it becomes a homogenous mixture in a drop form. The prepared *Swarana Prashana* was filled in autoclaved sterile dropper bottles for dispensing.

Physico-chemical and HPTLC analysis of the final product were carried out under the experts of pharmaceutical chemistry laboratory at the pharmaceutical chemistry laboratory of IPGT & RA, Gujarat Ayurved University, Jamnagar.

PHYSICOCHEMICAL PARAMETERS

Physico-chemical Analysis

Physico-chemical analyses were carried out by following the parameters. The common parameters were mentioned for Ayurvedic Pharmacopeia of India and CCRAS guidelines Physico-chemical analysis like loss on drying at 110°C[7], pH value[8], ash value[9], water soluble extractive[10], methanol soluble extractive[11] were recorded.

OBSERVATIONS AND RESULTS

PHYSICO-CHEMICAL ANALYSIS

Swarna Prashana and Madhu-Ghrita Prashana were analyzed using various standard physico-chemical parameters such as loss on drying, water soluble extract, alcohol soluble extract etc.

Physico-chemical analysis

Physico-chemical analysis of *Swarna Prashana and Madhu-Ghrita Prashana were* revealed in *Swarna Prashana* the value of Specific gravity 1.2537, loss on drying was 16.65%, water soluble extraction 77.4% Methanol soluble extraction 84.04%, pH Value 5.5, and *Madhu-Ghrita Prashana* the value of Specific gravity 1.2368, loss on drying was 16.9 %, water soluble extraction 63.4% Methanol soluble extraction 80.72%, pH Value 5.5, are shown in table 1.

Table 1: Physicochemical parameters of *Swarna Prashana* and *Madhu-Ghrita Prashana*.

S. No.	Parameters	Results	
		Swarna Prashana	***Madhu-Ghrita Prashana***
1.	Specific gravity	1.2537	1.2368
2.	Loss on drying (% w/w)	16.65	16.9
3.	Methanol soluble extractive value (% w/w)	84.04	80.72
4.	Water soluble extractive value (% w/w)	77.4	63.4
5.	pH of 05 % aqueous solution	5.5	5.5

Qualitative parameters of *Swarna Prashana* and *Madhu-Ghrita Prashana*[12]

In *Swarna Prashana* Reducing sugar 31mg, Non-Reducing Sugar 26.5 mg, Total sugar 57.5 mg, Total fatty material 9.59 % and *Madhu-Ghrita Prashana* Reducing sugar 37mg, Non-Reducing Sugar 23.2mg, Total sugar 60.2 mg, Total fatty material 9.17% are show in table - 2.

Table 2: Qualitative parameters of *Swarna Prashana* and *Madhu-Ghrita Prashana*.

S. No.	Parameters	Results	
		Swarna Prashana	***Madhu-Ghrita Prashana***
1.	Reducing sugar(mg)	31	37
2.	Non reducing sugar(mg)	26.5	23.2
3.	Total sugar (mg)	57.5	60.2
4.	Total fatty material (%)	9.59	9.17

High Performance Thin Layer Chromatography

HPTLC was performed as per the guideline provided by API. Methanolic extract of drug sample was used for the spotting. HPTLC was performed using toluene + ethyl acetate (9:1 v/v) solvent system. The colour and Refractive values of resolved spots were noted. In study of High-Performance Thin Layer Chromatography, Methanol extract of Sample was spotted on pre-coated silica gel GF254 aluminium plate as 6 mm bands, 5 mm apart and 1 cm from the edge of the plates, by means of a Camag Linomate V sample applicator fitted with a 100

µL Hamilton syringe. After development, Densitometric scanning was performed with a Camag TLC scanner III in reflectance absorbance mode at 254 nm and 366 nm under control of win CATS software (v1.2.1 Camag). The slit dimensions were 6 mm x 0.45 mm and the scanning speed was 20 mm.[13]

High Performance Thin Layer Chromatography (HPTLC) of *Swarna Prashana*

Swarna Prashana HPTLC, The methanol extract of the sample was analyzed qualitatively for different functional groups. Densitometric scanning of the HPTLC pattern showed 3 spots corresponding to hRf values 0.08, 0.72, 0.85, in short wave UV 254 nm and 1 spots corresponding to hRf values 0.17 obtained in long wave UV 366 nm are show in **table 3 and plate 1.**

High Performance Thin Layer Chromatography (HPTLC) of *Madhu-Ghrita Prashana*

Madhu-Ghrita Prashana HPTLC, The methanol extract of the sample was analyzed qualitatively for different functional groups. Densitometric scanning of the HPTLC pattern showed 9 spots corresponding to hRf values 0.01,0.08,0.40,0.57,0.63,0.74.0.78,0.86,0.92 in short wave UV 254 nm and 3 spots corresponding to hRf values obtained 0.01,0.16,0.40 in long wave UV 366 nm are show in **table 3 and plate 2.**

Table 3: Chromatographic results of *Swarna Prashana and Madhu-Ghrita Prashana.*

Conditions	**Rf values *Swarna Prashana***	**Rf values Madhu-*Ghrita Prashana***
Short ultra violet (254 nm)	0.08, 0.72, 0.85	0.01, 0.08, 0.40, 0.57, 0.63, 0.74, 0.78, 0.86, 0.92
Long ultra violet (366 nm)	0.17	0.01, 0.16, 0.40

Nature of adsorbed components, if with different polarity, formerly total number of components and respective Reference values also differs. In short, nature of different matrix modulates both the studied parameters.

Plate 1: Densitogram of *Swarna Prashana at* 254 nm and 366 nm

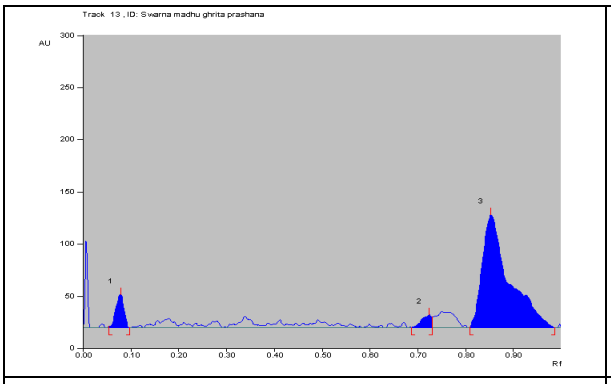
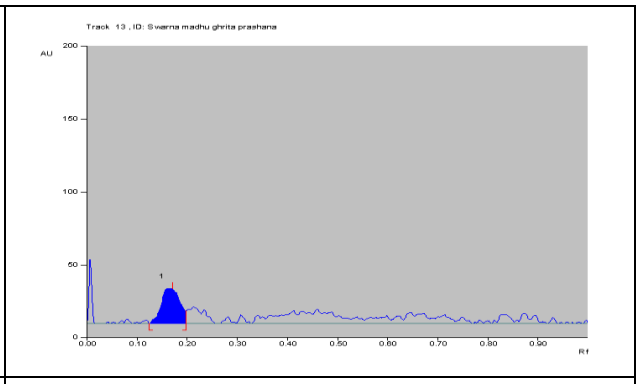
	
Peak display at 254nm	**Peak display at 366 nm**

Plate 1: Three dimensional HPTLC (3D) Densitgram

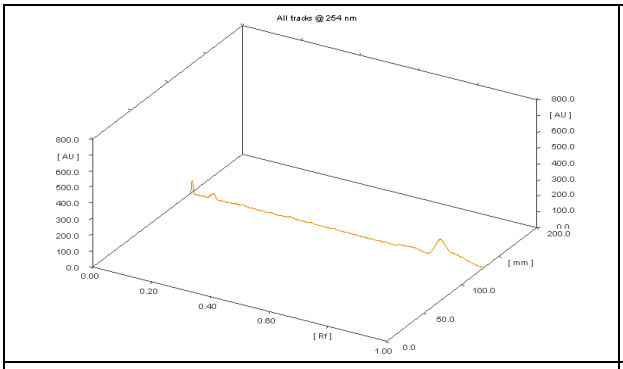
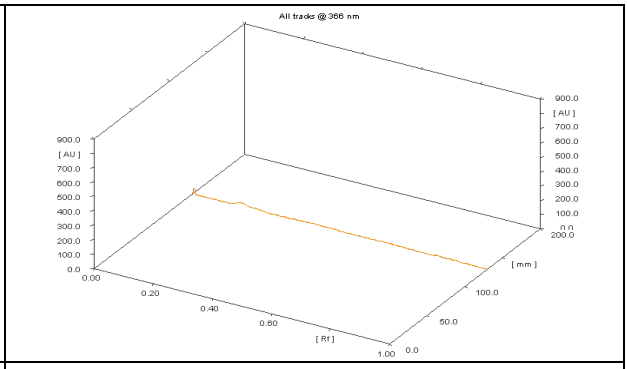
	
254nm	**366nm**

Plate 2: Densitogram of *Madhu-Ghrita Prashana at* 254 nm and 366 nm

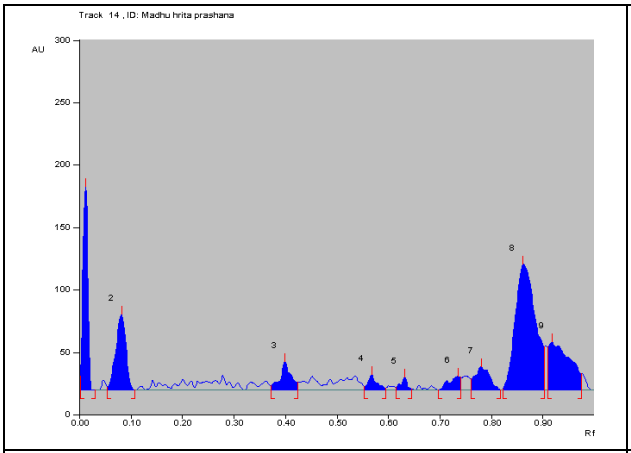
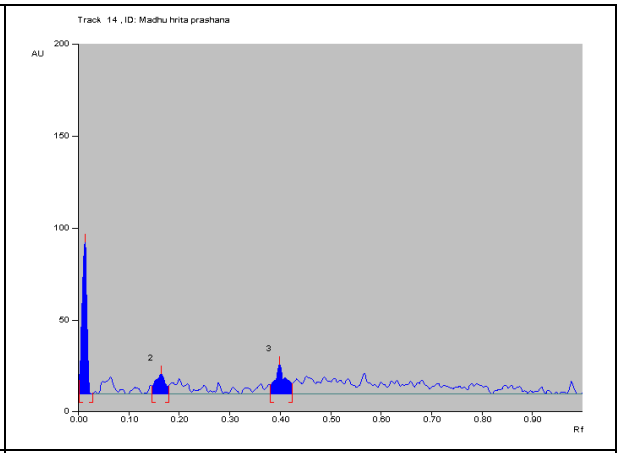
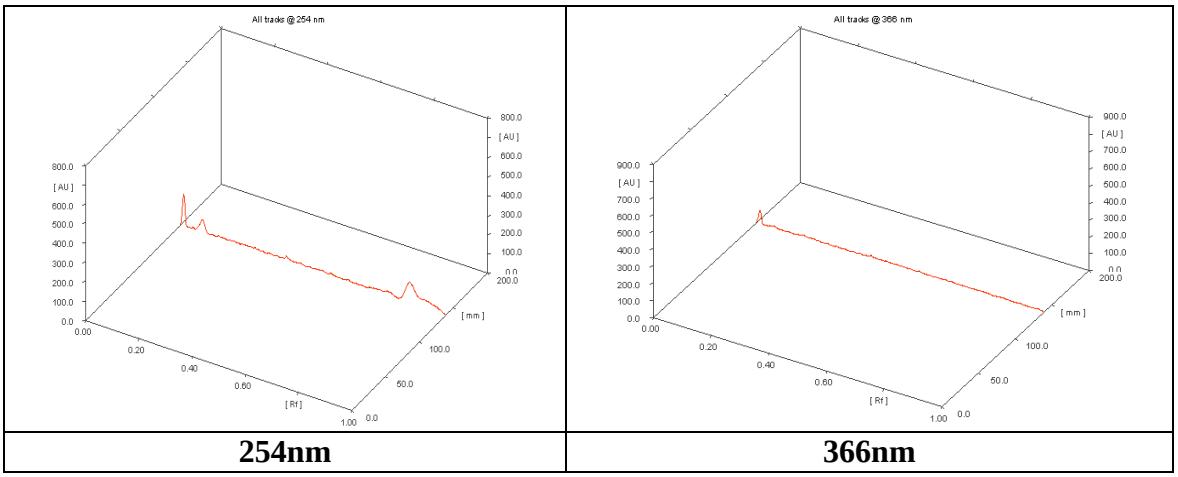
	
Peak display at 254nm	**Peak display at 366 nm**

Plate 2: Three dimensional HPTLC (3D) Densitgram



254nm	366nm

DISCUSSION

Specific gravity nearly same in both the drugs *Swarna Prashana* 1.2537 and *Madhu-Ghrita Prashana* 1.2368, Loss on drying 16.65%w/w in *Swarna Prashana* and 16.9%w/w *Madhu-Ghrita Prashana* were present these shows long shelf life and prevents microbial growth, 77.4% w/w of water soluble extractives in *Swarna Prashana* and 63.4% w/w in *Madhu-Ghrita Prashana.* 84.04%w/w methanol soluble extractives were present in *Swarna Prashana* and 80.72%w/w were present in *Madhu-Ghrita Prashana* indicating that both drugs considerable amount of polar compounds in the sample. ₚh of both drugs were 6 suggesting acidic nature of drugs. In quality parameters reducing sugar in *Swarna Prashana* 31 mg and *Madhu-Ghrita Prashana* 37 mg, Non reducing sugar in *Swarna Prashana* 26.5 mg and *Madhu-Ghrita Prashana* 23.2 mg, Total sugar in *Swarna Prashana* 57.5 mg and *Madhu-Ghrita Prashana* 60.2 mg and Total fatty acid material 9.59% in *Swarna Prashana* and 9.17% *Madhu-Ghrita Prashana*. In HPTLC of *Swarna Prashana* 3 spots at 254 nm and 1 spots 366 nm were obtained and HPTLC of *Madhu-Ghrita Prashana* 9 spots at 254 nm and 3 spots 366 nm were obtained indicating its possible components of matrix which may possess its therapeutic effect.

CONCLUSION

The physico chemical analysis of *Swarna Parshana* and *Madhu-Ghrita Prashana* confirmed the purity of the drug. Further studies may be carried out on it on the basis of observation made and results of experimental studies.

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