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THIN LAYER CHROMATOGRAPHY STUDY ON ALAMBUSHADI CHURNA TABLET

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ABSTRACT

Globally it is being accepted that medicinal plants play an important role for providing health benefits. Most of the Ayurvedic medicines are plant based drugs. The complex composition of medicinal plant based drugs is a major challenge for quality control. Thin layer chromatography is an important parameter for standardization of the medicinal plant based drugs. One important Ayurvedic drug i.e. *Alambushadi Churna* tablet had been selected from Ayurvedic famous book named *Bhava Prakasha* for Thin layer chromatography study. It is mainly used in the treatment of disease *Amavata* (Rheumatoid arthritis). Drug preparing and Thin layer chromatography study both had been done in the Institute for Post Graduate Teaching and Research in Ayurveda, Gujarat Ayurved University, and Jamnagar. Four phytocostitutents were indicated under short ultra violet ray (254 nm) and five phytocostitutents were indicated under long ultra violet ray (366 nm) by thin layer chromatography study on the sample of *Alambushadi Churna* tablet.

Keywords: Thin layer chromatography, *Alambushadi Churna* tablet.

INTRODUCTION

It is being globally accepted that medicinal plants play an important role to provide health benefits to human beings. Recently the increased demand for plant based drugs and their eventual commercialization has given more concentration on their status. Maximum Ayurvedic medicines are plant based drugs. But global acceptances of Indian plant based drugs are still low and most probably inadequacy of quality control is the most important responsible factor for this. The complex composition of plant based drugs has a major challenge for quality control. Thin layer chromatographic finger printing is considered to be very useful parameter for evaluating the quality of Ayurvedic formulations. Now a day's Thin layer chromatographic study is an important way for standardization of the plant based drugs. It draws also a major attention to the different research scholars for research purpose. Many plants based drugs are described in Ayurvedic texts in context of treatment purpose of different diseases. One important plant based Ayurvedic drugs i.e. Alambushadi Churna tablet had been selected from famous Ayurvedic book for its thin layer chromatographic study.

Objectives: To evaluate the thin layer chromatographic data of Alambushadi churna tablet.

MATERIALAS AND METHODS

Alambusadi Churna tablet is an important Ayurvedic plant based medicine and it is

mainly used in the treatment of disease Amavata (Rheumatoid arthritis). Amavata disease is more simulated to Rheumatoid arthritis according to its clinical manifestations and pathogenesis 1, 2. Alambusadi Churna drug is mentioned in slokas (Information in Samskrit language) no. 69 to 70 of 26th chapter of the Bhava Prakasha (Ayurvedic book) 3. Alambushadi churna tablet is a poly herbal Ayurvedic drug and thirteen Ayurvedic medicinal plants are used in it as ingredients 4, 5. Name of the ingredients (Ayurvedic name and Botanical name), used part of the plant ingredients and quantity of used part of the ingredients into the one tablet are shown in the table-1. This Alambusadi Churna tablet was prepared in the Pharmacy of Institute for Post Graduate Teaching and Research in Ayurveda, Gujarat Ayurved University, Jamnagar and Thin layer chromatographic study of the sample of this drug (i.e. Alambusadi Churna tablet) had been done in the Pharmaceutical laboratory of Institute for Post Graduate Teaching and Research in Ayurveda, Gujarat Ayurved University, and Jamnagar. Thin layer chromatography (T.L.C) of the methanol extract of the sample of Alambushadi Churna tablet had been done by using Toluene and Ethyl acetate in the ratio of 9:1 as mobile phase and it was visible under short ultra violet ray and long ultra violet ray. It had been revealed different spots under short and long ultra violet ray and it had been given different Rf , hRf , ΔhRf values 6.

Table1: Ingredients list of *Alambushadi Churna* tablet (500 mg)

S. No.	Ingredients**(Ayurvedic name)**	**Botanical Name**	**Used part**	**Quantity (part)**
1.	*Alambusha*	*Sphaeranthus indicus* Linn.	Dried mature whole plant	1
2.	*Gokshur*	*Tribulus terrestris* Linn.	Dried mature Fruit	1
3.	*Guduchi*	*Tinospora cordifolia*	Dried Stem	1
4.	*Vriddhadaraka*	*Argyreia nervosa*(Burm.f.) Bojer	Dried Root	1
5.	*Pippali*	*Piper longum* Linn	Dried mature Fruit	1
6.	*Trivrit*	*Operculina terpathum* Linn	Dried Root	1
7.	*Mustaka*	*Cyperus rotundus* Linn	Dried Rhizome	1
8.	*Varuna*	*Crataeva nurvala* Buch-Ham.	Dried stem Bark	1
9.	*Punarnava*	*Boerhavia diffusa* Linn	Dried mature whole plant	1
10.	*Haritaki*	*Terminalia chebula* Retz	Dried mature Fruit	1
11.	*Amalaki*	*Emblica officinalis* Gaertn	Dried mature Fruit	1
12.	*Vibhitaka*	*Terminalia bellirica* Roxb	Dried mature Fruit	1
13.	*Sunthi*	*Zingiber officinale* Roxb	Dried Rhizome	1

RESULTS AND DISCUSSION

Results of Thin layer chromatographic study on sample of Alambushadi Churna tablet under short ultra violet ray (254 nm)

and under long ultra violet ray (366 nm) are shown in the table-2 and table-3 respectively.

Table2: Thin layer chromatography data of Alambushadi Churna tablet under short ultra violet ray (254 nm)

No. of Spots	Distance travel by Solvent (cm)	Distance travel by Solute (cm) Short UV (254nm)	R_f -value	hR_f -value	ΔhR_f -value
4	17.2	2.6	0.15	15	
		3.1	0.18	18	**3**
		6.4	0.37	37	**19**
		7.5	**0.44**	**44**	**7**

Table-2 shows the Thin layer chromatography data of the sample of Alambushadi Churna tablet under short ultra violet ray (254 nm) and it reveals that the distance traveled by the solvent was 17.2 cm, number of spots under short ultra violet ray were 4, the distance traveled by the solutes seen under short ultra violet ray were respectively 2.6cm, 3.1cm, 6.4cm and 7.5cm. The calculated Rf –values were respectively 0.15, 0.18, 0.37 and 0.44. The calculated hRf –values were respectively 15, 18, 37 and 44 and also the calculated ΔhRf –values were respectively 3, 19 and 7.

Table 3: Thin layer chromatography data of Alambushadi Churna tablet under long ultra violet ray (366 nm)

No. of Spots	Distance travel by Solvent(cm)	Distance travel by Solute (cm) long UV (366nm)	R_f -value	hR_f -value	ΔhR_f -value
5	17.2	2.3	0.13	13	
		3.2	0.19	19	**6**
		4.1	0.24	24	**5**
		10.5	0.61	61	**37**
		14.1	**0.82**	**82**	**21**

Table-3 shows the Thin layer chromatography data of the sample of *Alambushadi Churna* tablet under long ultra violet ray (366 nm) and it expresses that the distance traveled by the solvent was 17.2 cm, number of spots under long ultra violet ray were 5, the distance traveled by the solutes seen under long Ultra violet ray were respectively 2.3cm, 3.2cm, 4.1cm, 10.5cm and 14.1cm. The calculated R_f –values were respectively 0.13, 0.19, 0.24, 0.61and 0.82. The calculated hR_f –values were respectively 13, 19, 24, 61 and 82 and also the calculated ΔhR_f –values were respectively 6, 5, 37 and 21.

CONCLUSION

It can be concluded on the basis of this Thin layer chromatography (TLC) study on the sample of *Alambushadi Churna* tablet that four phytocostitutents were indicated under short ultra violet ray (254 nm) and five phytocostitutents were indicated under long ultra violet ray (366 nm) into the sample of *Alambushadi Churna* tablet by TLC but more research work is necessary on this subject for more information and more accuracy.

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