



Research Article

COMPARATIVE PHYSICO-CHEMICAL AND PHYTO-CHEMICAL ANALYSIS OF *TALISADI CHURNA* WSR TO DIFFERENT MARKET SAMPLES

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ABSTRACT

Talisadi Churna is a compound herbal formulation extensively used in disorders of upper respiratory tract and Gastro-intestinal tract. Formulation has greater demand due to its simple combination, therapeutic efficacy and methods of preparation and packaging due to which multiple companies prepare the formulation with due precision and safety evaluation. A current study was taken to evaluate in-house prepared sample of *Talisadi Churna* as per the AFI protocol and was compared to 3 different market samples. All the samples of *Talisadi Churna* were subjected to physico-chemical, preliminary phyto-chemical analysis and TLC. The study reveals that there is a significant difference is seen in the physico-chemical analysis and TLC, but there is no significant difference is seen in the preliminary phyto-chemical analysis.

KEYWORDS: *Talisadi Churna*, Physico- chemical, Preliminary Photo-chemical analysis, TLC.

INTRODUCTION

World Health organization (WHO) has accepted the importance of traditional and alternative medicines in the Health sector and is now encourages recommends and promotes traditional/herbal remedies in national health care programs because these drugs are easily available at low cost, safe and people have faith in them.^[1] Currently 88% of the world's inhabitants rely mainly on traditional medicine for their primary health care.^[2] This has significantly increased the Global demand to produce and supply medications in large scale quantity with maintaining their basic principles and efficacy with Standard quality and control.

Standardization of herbal formulations is essential in order to assess the quality of drugs based on the concentration of their active principles and thereby justify the acceptability of herbal formulations in modern system of medicine.^[3] Standardization of herbal drugs comprises of total information and controls to guarantee consistent composition of all herbals including analytical operations for identification, marker based estimation and assay of active principles. Quality evaluation of herbal preparation is a fundamental requirement of industry and other organizations dealing with Ayurvedic and herbal products.^[4] They

are becoming less potent due to unavailability of genuine drugs and lot of adulterations. So there is a need to evaluate the herbal products in order to check the genuineness.

Talisadi Churna^[5] is a poly herbal Ayurvedic preparation widely used as a good appetizer as well as digestive and also used in respiratory and gastro intestinal ailments. In the present study, an attempt has been made to check the comparative physico-chemical and phyto-chemical properties of *Talisadi Churna* (prepared in house) with special reference to different market samples.

Aims and Objectives

To compare the Physico-chemical and Preliminary phyto-chemical analysis of *Talisadi Churna* with reference to different market samples.

Materials and Methods

Collection of Raw Materials

Raw materials are procured from Available sources for the preparation of *Talisadi Churna* (in-house) and authenticated by experts in Central Research Laboratory, Belgaum. Three different market samples of *Talisadi Churna* were collected from Ayurvedic medical shops of Belgaum local market.

Preparation of Talisadi Churna

1) All the completely dried drugs namely *Talisa*, *Maricha*, *Shunthi*, *Pippali*, *Vamshalochana*, *Twak*, *Ela* and *Khandasharkara* are made into fine powders separately and sieved through no 120 mesh separately.

2) All the fine powders were mixed homogeneously to prepare *Talisadi Churna* as per Ayurvedic Formulary of India. (Table 1)

3) This is considered as in-house *Talisadi churna*. Other three marketed samples were collected from local Ayurvedic medical shops of different companies.

Table 1: Ingredients of Talisadi Churna

Ingredients	Latin name	Part used	Quantity
<i>Talisa</i>	<i>Abies webbiana</i> Linn	Leaves	1g
<i>Maricha</i>	<i>Piper nigrum</i> Linn	Dried fruit	2g
<i>Shunthi</i>	<i>Zingiber officinale</i> Rosc	Rhizome	3g
<i>Pippali</i>	<i>Piper longum</i> Linn	Dried fruit	4g
<i>Vamshalochana</i>	<i>Bambosa aruninaceae</i> Wild	<i>Swetapinda churna</i>	5g
<i>Twak</i>	<i>Cinnamomum Zeylanicum</i> Blume	Stem bark	½ g
<i>Ela</i>	<i>Elettaria cardamomum</i> Maton	Seeds	½g
<i>Khandasharkara</i>	-----	Sugar candy	32 g

Table 2: Results of Organoleptic characters

Parameter	Sample I (In-house)	Sample II	Sample III	Sample IV
Color	Creamish white	Creamish white	Creamish white	Creamish white
Odor	Aromatic	Aromatic	Aromatic	Aromatic
Taste	Sweet & Pungent	Sweet & Pungent	Sweet & Pungent	Sweet & Pungent
Touch	Fine	Fine	Fine	Fine

Table 3: Physico-chemical Analysis of various samples of Talisadi Churna

Parameter	Sample I (In-house)	Sample II	Sample III	Sample IV
Loss on drying at 110° C	4.54%	7.46%	5.45%	7.89%
Total Ash	10.6%	12 %	12.2%	11.2%
Acid insoluble Ash	9.2%	10.6%	9%	10.2%
Water soluble extractive value	67.2%	69.6%	68.0%	77.6%
Ethanol soluble extractive value	13.6%	12%	12%	13.6%
pH	6	6	6	6

Table 4: Preliminary Phyto-chemical analysis of Talisadi Churna

Phyto chemicals	Sample I (In-house)	Sample II	Sample III	Sample IV
Alkaloids	+ve	+ve	+ve	+ve
Glycoside	-ve	-ve	-ve	-ve
Carbohydrates	+ve	+ve	+ve	+ve
Flavonoids	+ve	+ve	+ve	+ve
Tannins	+ve	+ve	+ve	+ve
Steroids	+ve	+ve	+ve	+ve
Saponin	+ve	+ve	+ve	+ve
Fats	+ve	+ve	+ve	+ve

Table 5: Fluorescence Analysis of Sample I and II

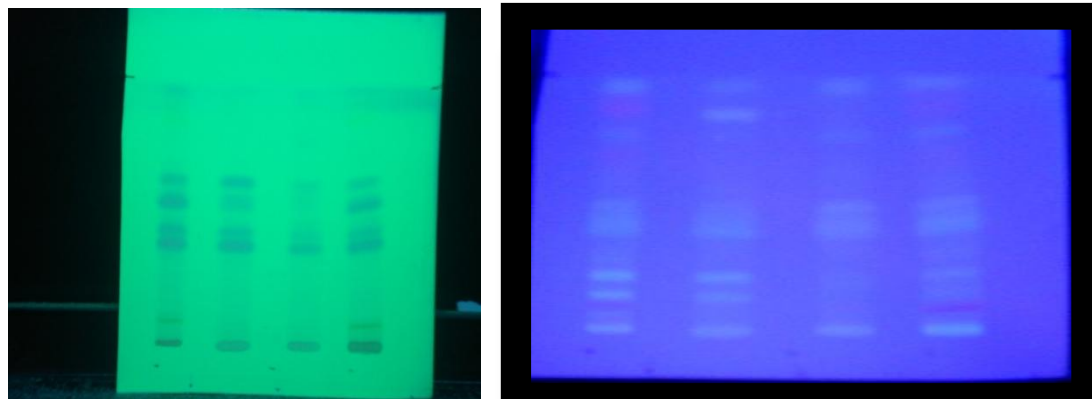
	Sample I		Sample II	
	Short wave length	Long wave length	Short wave length	Long wave length
Plain powder	Light grey	Dark brown	Light grey	Dark brown
1 N NaOH	Greenish yellow	Dark brown	Greenish yellow	Dark brown
Picric acid	Dark brown	Dark brown	Dark brown	Dark brown
Acetic Acid	Brown	Dark brown	Brown	Dark brown
1 N HCl	Dark brown	Dark brown	Dark brown	Dark brown
1 N HNO ₃	Yellowish brown	Dark brown	Yellowish brown	Dark brown
Iodine 5%	Black	Dark brown	Black	Dark brown
5% FeCl ₃	Yellowish brown	Dark brown	Yellowish brown	Dark brown
50% HNO ₃	Dark brown	Dark brown	Dark brown	Dark brown
Methanol	Ash	Dark brown	Ash	Dark brown
Methanol + 1N NaOH	Yellowish brown	Dark brown	Yellowish brown	Dark brown

Table 6: Fluorescence Analysis of sample III and IV

Reagent	Sample III		Sample IV	
	Short wave length	Long wave length	Short wave length	Long wave length
Plain powder	Light grey	Dark brown	Light grey	Dark brown
1 N NaOH	Greenish yellow	Dark brown	Greenish yellow	Dark brown
Picric acid	Dark brown	Dark brown	Dark brown	Dark brown
Acetic Acid	Brown	Dark brown	Brown	Dark brown
1 N HCl	Dark brown	Dark brown	Dark brown	Dark brown
1 N HNO ₃	Yellowish brown	Dark brown	Yellowish brown	Dark brown
Iodine 5%	Black	Dark brown	Black	Dark brown
5% FeCl ₃	Yellowish brown	Dark brown	Yellowish brown	Dark brown
50% HNO ₃	Dark brown	Dark brown	Dark brown	Dark brown
Methanol	Ash	Dark brown	Ash	Dark brown
Methanol + 1N NaOH	Yellowish brown	Dark brown	Yellowish brown	Dark brown

Rf values of all the four samples**Table-7: TLC of all the four samples**

S I	S II	S III	S IV
0.09,	0.09,	0.45,	0.09,
0.38,	0.38,	0.54,	0.38,
0.45,	0.45,	0.57,	0.45,
0.54,	0.54,	0.65,	0.54,
0.57,	0.57,	(0.8	0.57,
0.65,	0.65,	additional)	0.65,
0.89,	0.89,		0.89,
1.00	1.00		1.00
	0.89 (missing)		

TLC Photos of all the 4 samples**S-I S-II S-III S-IV in short wavelength S-I S-II S-III S-IV in long wavelength****Organoleptic evaluation**

Organoleptic evaluation refers to evaluation of formulation by color, odor, taste, texture etc. The organoleptic characters of all the samples were carried out based on the method as described by Siddiqui et. al^[6]. (Table 2)

Physico-chemical analysis^[7]

Physico-chemical analysis like moisture content, total ash, acid insoluble ash, water and alcohol soluble extractive values, pH (10% aqueous solution) were determined in all the 4 samples. (Table 3)

Phyto-Chemical Analysis^[8]

Phyto-chemical analysis were carried out with the methanolic extract of *Talisadi Churna* to check the presence or absence of phyto constituents like alkaloids, tannins, phenolic compounds, flavonoids and saponins etc. (Table 4)

Fluorescence Analysis^[9]

Fluorescence analysis was carried out for all the four samples of *Talisadi Churna* with reagents like 1N Sodium hydroxide, Picric acid, Acetic acid, 1N Hydrochloric acid (HCl), 1N Nitric acid, Iodine 5%, 5% FeCl₃, 50% HNO₃ and Methanol observed in visible light, 254nm & 366nm. (Table 5 and 6)

Thin Layer Chromatogram^[10]

TLC was carried out for all the 4 samples with mobile phase toluene & ethyl acetate in the ratio of 7:3. (Table 7)

RESULTS

There is no significant difference in organoleptic characters of in-house sample and other three different market samples. There is significant difference in loss on drying compared to in-house sample that is 4.54%. Sample III and IV have got almost similar LOD that is 7.46, 7.89 and sample III has almost similar value to in-house sample. Total ash of in-house sample is 10.6%. Sample II and III

have similar values but sample IV is almost similar to in-house sample.

Acid insoluble ash of in-house sample and sample III are almost equal, sample II and IV are almost equal. Water soluble extract of in-house sample is 67.2%, whereas sample II and III are having almost similar values but sample IV is having significantly high water soluble extractive that is 77.6%. Ethanol soluble extractive of in-house sample and sample IV are similar. Sample II and III are having similar value but there is no significant difference in 4 samples. pH of all the samples is similar i.e., 6 Preliminary phyto-chemical analysis of *Talisadi Churna* of all 4 samples reveals that there is a presence of all the active constituents like alkaloids, tannins, phenolic compounds, flavonoids and saponins etc in all the 4 samples. There is no much significant difference in fluorescence analysis of all 4 samples. TLC of in-house and sample IV are almost similar. One band in sample II is missing at Rf value 0.89 and few other bands are missing. One additional band at 0.8 Rf is present, which is not present in any other sample including in-house sample.

DISCUSSION

Standardization of Ayurvedic formulations is an important step for the establishment of a consistent biological activity, a consistent chemical profile, or simply a quality assurance program for production and manufacturing of herbal drugs.^[11] WHO specified guidelines for the assessment of the safety; efficacy and quality of herbal medicines as a prerequisite for global harmonization are of utmost importance.^[12] In Current Study, *Talisadi Churna* was taken due to its significant usage in Global market in respiratory and Gastrointestinal system. *Talisadi Churna* is one of the important *Churna* explained in *Sharangadhara Madhyama Khanda* widely used to improve and enhance the taste and digestion. It is indicated in diseases like *Kasa*, *Swasa*, *Jwara*,

Vamana, Atisara, Shosha, Admana, Pleeha, Grahani and Pandu roga.

Current Study showed that, there were significant absence of certain bands in TLC under UV light signifies the absence of certain Active principles of herb in formulation which questions the efficacy of the product. Further studies are required to confirm the same and it is recommended to conduct periodical quality checking for the marketed samples for the genuineness.

CONCLUSION

Three different market samples of *Talisadi Churna* were compared with in-house preparation which is indicated similar organoleptic characters. Physico-chemical analysis has shown some variations in LOD and total ash contents. Preliminary phyto-chemical analysis reveals that there is a presence of all the active constituents like alkaloids, tannins, phenolic compounds, flavonoids and saponinsetc in all the 4 samples which are similar. But with respect to chemical analysis by TLC method major differences were observed in sample III where some of the either missing or intensity was very low compared to in house sample. This indicates some of the market preparations lack in proper quality control techniques or they fail in maintaining the genuineness.

REFERENCES

1. Anonymous. Quality Control Methods for Medicinal Plant Materials, World Health Organization, Geneva, 1998, 25-28.
2. Kochhar SL. 1981. Tropical crops: A textbook of economy botany. London: Macmillan Pub Ltd. 268-71.

3. Yadav NP and Dixit VK. Recent approaches in herbal drug standardization. *Int J Integr Biol*, 2008; 2:195-203.
4. Zafar R, Panwar R and Sagar Bhanu PS. Herbal drug standardization. *The Indian Pharmacist*, 2005; 4(36):21-25.
5. Pandit Kashinath Shastry(Ed); Charaka Samhita; Sutrasthana; 23rd Edition; Chaukambha orientalia, Varanasi, India, 1981;; Chikitsa sthana Chapter 8/ Rajayakshama chikitsa-145-148; Page-245.
6. Pharmacopeia standards for Ayurvedic formulations, Central Council for Research for Ayurveda and Siddha, Revised Ed. Ministry of Health and Family Welfare, Government of India; New Delhi, 1987, p-1-20.
7. Khandelwala, Text book of Pharmacognosy, Nirali Publications, p-141-152.
8. A.K. Gupta, Quality standards of Indian medicinal plants, Vol-1, ICMR, New Delhi, 2003, p-95
9. Anonymous. The Ayurvedic Formulary of India. Part I, 2nd Edn. Government of India, Ministry of Health and Family Welfare, New Delhi, 2003,113.
10. A.K. Gupta, Quality standards of Indian medicinal plants, Vol-1, ICMR, New Delhi, 2003, p-95.
11. Patra KC, Pareta SK, Harwansh RK and Jayaram Kumar K. Traditional approaches towards standardization of herbal medicines -A review. *J Pharm Sci Technol*, 2010; 2 (11): 372-379.
12. Khan TA, Mallya R, Gohel A. Standardization of marketed Ayurvedic formulation, Balaguloochyadi kashayam- physicochemical, microbial evaluation and ephedrine content. *J App Pharm Sci*, 2016; 6 (12): 184-189.

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