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COMPARATIVE ANALYTICAL STUDY OF FRESH AND READY TO USE DASHMULA KWATHA

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ABSTRACT

Kwatha. i.e. decoction is a one of the most commonly and important dosage forms or *kalpana* in Ayurved. *Dashmula kwatha one* of the prime *kwatha* routinely used as *vata shamaka* and for jvara, *svasa, parshvashula.* In today's time *kwatha* are available in two forms – *yavkut churna* (coarse powder) from which *kwatha* is prepared freshly and ready to use *kwatha* (liquid decoction) manufactured by companies. So is was decided to do the comparative analytical study of freshly prepared *kwatha* from the *yavkut churna* and ready to use *kwatha* available in market of two companies. Parameter like organoleptic, physicochemical, primary phytoconstituents of aqueous extract and TLC were carried out. Slight variation were observed in the parameters carried out however one major finding was that one ready to use market sample contained high amounts of sugar i.e syrup like preparation not mentioned in label and classical reference. Hence one should be careful while prescribing and using ready to use *kwatha available* in market.

KEYWORDS: *Dashmula kwatha,* fresh *kwatha,* ready to use *kwatha,* TLC.

INTRODUCTION

Kwatha i.e. decoction is one of the basic dosage form of Ayurveda therapeutics. It is advised to be prepared fresh each time for its use. But practically it is seen that in today's time very

few people are able to prepare it freshly, for it is cumbersome to follow the process daily. So pharmacies have come forth with a solution for this – the prepared readymade *kwatha.*

So, today, we have two ways in which *kwatha* is presented in the market. One is prepared readymade *kwatha which* is used as per instructions on the label or as per physician's direction. The second is the *yavakuta (kwatha) churna* form, from which *kwatha* is freshly prepared as per classical reference. So it was thought to study analytically, both the types of *kwatha* i.e the readymade *kwatha* and the freshly prepared *kwatha* and compare the results to see whether there are major changes or not and thereby try to conclude whether readymade *kwatha* are acceptable or not.

For the current work, *Dashmula kwatha*[1] an important *kwatha* of day to day Ayurveda therapeutics, being used chiefly as *vata shamaka* and in *jvara, svasa, parshvashula* etc.[2] was selected.

MATERIALS AND METHOD

Two samples of readymade *liquid Dashmula kwatha [*market sample 1(M1), market sample 2 (M2)] were purchased from the local market.

Dashmula yavakuta churna was purchased from the market and fresh *kwatha* (MR)was prepared as per general method given in *Sharangdhara samhita*[3] i.e. sixteen times of water to the *yavakuta churna* was taken and it was heated till reduced to 1/8th part.

All the samples were subjected to organoleptic test, physico-chemical tests like specific gravity,[4] total solid content,[5] refractive index[6] and pH.[7]

The samples were tested for phytoconstituents like alkaloids, tannin, flavonoids, carbohydrate and saponin,[8,9] Fehling test[10,11] for sugar content was done.

TLC was carried out and the spots were compared.

TLC conditions

Sample preparation: 15ml sample diluted with 15 ml of water was extracted with 20 ml of ethyl acetate and ethyl acetate fraction was used for TLC.

Stationary phase: Merck pre-coated silica gel 60 F_{254} plate

Solvent system: Toluene: Ethyl Acetate: Acetic Acid: Methanol (10:5:0.2:1)

Solvent front: 8 cm

Spray reagent: 10% Methanolic Sulphuric Acid

RESULT

Table no. 1: Organoleptic characteristics of Fresh and Ready to use *dashmula kwatha samples*.

Organoleptic characteristics	MR	M1	M2
Colour	Light Brownish	Dark Brownish	Brownish
Odour	Specific	Specific	Specific
Taste	*Tikta kashaya*	*Madhur kashaya*	*Tikta kashaya*
Consistency	Watery	Thick	Slightly thicker

Table no. 2: Physico-chemical Parameters of Fresh and Ready to use *dashmula kwatha samples*.

Sr. no.	Parameter	Observed Value		
		MR	M1	M2
1	Specific gravity	1.0153	1.2896	1.039
2	Total Solid Content	0.812 % W/V	90.16 % W/V	11.24 % W/V
3	Refractive Index	1.335	1.444	1.338
4	pH	4.80	6.02	4.15

Table no. 3: Phytoconstituents of aqueous extract of Fresh and Ready to use *Dashmula kwatha samples*.

Sr. no.				
	Phytoconstituents	MR	M1	M2
1	Alkaloids	-	-	+
2	Tannin	+	+	+
3	Flavonoids	+	+	+
4	Carbohydrate	-	+++	-
5	Saponin	+	+	+

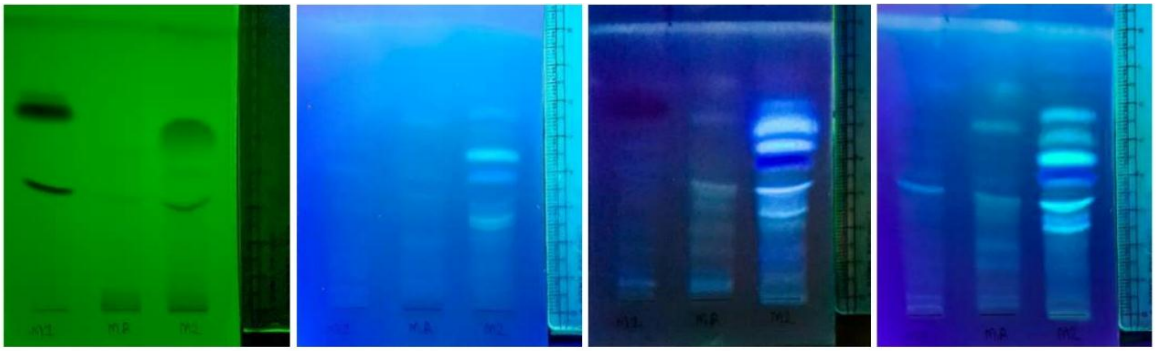

Fig. 1: TLC of fresh and ready to use *dashmulakwatha samples*.

Table no. 4: Rf values of Fresh and Ready to use dashmula kwatha samples.

UV 254 nm			UV 366 nm			UV 254 nm after spray with 10% Methanolic Sulphuric acid			UV 366 nm after spray with 10% Methanolic Sulphuric acid		
R_f value			R_f value			R_f value			R_f value		
M1	MR	M2	M1	MR	M2	M1	MR	M2	M1	MR	M2
0.43	0.41	0.37	0.05	0.05	0.06	0.03	0.03	0.07	0.02	0.03	0.03
0.71	0.58	0.50	0.18	0.25	0.12	0.1	0.08	0.16	0.06	0.06	0.06
0.76	-	0.62	0.35	0.35	0.26	0.18	0.17	0.27	0.11	0.08	0.15
-	-	-	0.50	0.42	0.31	0.25	0.25	0.31	0.16	0.17	0.26
-	-	-	0.58	0.68	0.32	0.31	0.31	0.41	0.25	0.25	0.31
-	-	-	-	-	0.36	0.43	0.37	0.46	0.32	0.33	0.36
-	-	-	-	-	0.38	0.56	0.40	0.50	0.37	0.42	0.38
-	-	-	-	-	0.47	0.68	0.66	0.55	0.45	0.47	0.43
-	-	-	-	-	0.50	-	0.80	0.62	0.48	0.56	0.47
-	-	-	-	-	0.56	-	-	0.68	0.56	0.61	0.50
-	-	-	-	-	0.63	-	-	0.80	0.60	0.67	0.56
-	-	-	-	-	0.71	-	-	-	-	0.80	0.62
-	-	-	-	-	-	-	-	-	-	-	0.71
-	-	-	-	-	-	-	-	-	-	-	0.80
-	-	-	-	-	-	-	-	-	-	-	0.87

DISCUSSION

The organoleptic characters showed that the consistency of freshly prepared *kwatha* - MR and second market sample- M2 was water consistent while that of first market sample –M1 was thick and sticky. And the M1 sample had a sweet taste along with *kashaya* taste. So seeing the syrupy consistency and sweet taste of M1, the Fehling test for sugar was done which showed reddish brown precipitates indicating the presence of sugar. On the basis of refractive index and compared with the Brix table[12] it showed nearly 60% of sugar in the M1 sample.

The primary physico- chemical parameters shows that M1 sample has higher value of specific gravity, total solid content, refractive index and pH as compared to freshly prepared kwatha and M2 sample. This again could be due to presence of high sugar content in M1 sample.

Phytoconstituent analysis also showed all *kwatha* - M1, M2 and MR has tannin, flavonoids and saponin present in them. Alkaloids were found present in M2 sample only. Three plus of carbohydrate was present in M1 sample. Which again reflects the presence of sugar in this sample.

TLC of the three samples showed that highest number of spots are found in M2 sample while the fresh kwatha sample and M1 sample had nearly similar spots.

CONCLUSION

In Indian market *Dashmula kwatha is* available as *yavakuta* form and ready-made liquid form.

Comparative study of freshly prepared kwatha from yavakuta form and readymade liquid form shows that there is slight difference in their analytical profile.

One of the market sample of ready to use kwatha contained sugar up to nearly 60%. Sugar is not mentioned classically in this formulation and it was not mentioned in the label also. So this sample would be harmful for patients of diabetes.

TLC showed highest number of spots in M2 followed by nearly similar in fresh kwatha-MR and M1 sample.

Thus care should be taken while using ready-made liquid kwatha of the market as it may contain sugar.

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