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A COMPARATIVE ANALYTICAL STUDY OF *JWARHARA KASHAYA CHOORNA* AND *JWARAHARA KASHAYA GHANA VATI*

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ABSTRACT

Jwarahara Kashaya Choorna is a proprietary herbal formulation, which has been under preparation for many years in NIA pharmacy and is highly effective in Fever, Joints pain etc. In the present study *Jwarahara Kashaya* Choorna (JKC) and its *Ghana Vati* (JKGV) hasbeen prepared. JKC and JKGV was evaluated on Organoleptic and physico chemical parameters. It was also tested for total microbial counts. Analytical test results showed JKC & JKGV were within normal limits but comparatively JKGV sample results was good in these perameters like Total ash, Water soluble ash, Acid insoluble ash,Water soluble extractive , Alchohal soluble extractive .Total bacterial count was little high in JKC but as in normal limits. Hence, these quality control parameters can be considered as tool for preparation of formulation.

Key words: *Jwarahara Kashaya* Choorna, *Ghana Vati,* Organoleptic,Physicochemical perameters.

INTRODUCTION: *Jwarahara Kashaya Choorna* is a proprietary herbal formulation, which has been under preparation for many years in NIA pharmacy and is highly effective in Fever, Joints pain etc. But Every time patient has to prepare decoction of *Jwarahara Kashaya Choorna* for consumption and it is a tedious process. If it is processed in to Ghana Vati form, it can be easily taken by the patient at any time with high acceptance with fixed dosage form and also increase the stability in comparison to *Choorna* form. Considering the above facts, the present study entitled.

In the present study *Jwarahara Kashaya Choorna* (JKC) and its *Ghana Vati* (JKGV) has been prepared.

Pharmaceutical study can be confirmed through Analytical tests of the drug. The meaning of the term analysis is the detailed examination, which reveals the minor but important aspects regarding the drug.

In the present Analytical study has been planned to developed analytical parameters for *Jwarahara Kashaya Choorna* (JKC) and its *Ghana Vati* (JKGV) according to classical and modern aspects.

AIMS & OBJECTIVES: -

1. To check the organoleptic characters of *Jwarahara Kashaya Choorna* (JKC) and its *Ghana Vati* (JKGV).
2. To carry out the physico-chemical analysis of *Jwarahara Kashaya Choorna* (JKC) & its *Ghana Vati* (JKGV).

MATERIALS AND METHODS -

This part of study can be divided into two parts. One part is for the analysis of *Jwarahara Kashaya Choorna* (JKC) second one for *Jwarahara Kashaya Ghana Vati* (JKGV). *Jwarahara Kashaya Choorna* and *Jwarahara Kashaya Ghana Vati* was evaluated on Organoleptic and physico chemical parameters. It was also tested for total microbial counts

Place: S.R. Labs Jaipur

Table no.1 Ingredients of JKC & JKGV:

Sr. No	Drug Name	Botanical Name /Latin Name	Part used	Part
1	*Haritaki*	*Terminalia chebula* Retz	(P.)	1
2	*Bibhitaka*	*Terminalia belerica*Roxb.	(P.)	1
3	*Amalaki*	*Emblicaofficinalis*Gaertn	(P.)	1
4	*Raktachandana*	*Pterocarpussantalinus*Linn	(Hd.Wd.)	1
5	*Cirayata*	*Swertiachirata*Buch	(Pl.)	1
6	*Guduchi*	*Tinosporacordifolia* (Willd.)	(St.)	1
7	*Haridra*	*Curcuma longa* Linn	(Rz.)	1
8	*Kutaja*	*Holarrhenaantidysenterica* (Roth)	(St.)	1
9	*Katuki*	*Picorrhizakurroa*Royle	(Rt.)	1
10	*Madhuka*	*Glycyrrhizaglabra* Linn	(Rt.)	1
11	*Musta*	*Cyperousrotundus* Linn	(Rz.)	1
12	*Nimba*	*Azadirachtaindica A.* Juss	(St.Bk.)	1
13	*Tulsi*	*Ocimum sanctum* Linn	(Pl.)	1

Procedure:

1. Determination of foreign matter[i]:

Drug should be entirely free from visible signs of contamination by molds or insects and other animal contamination, including animal excreta. Any mater not covered by the description of the drug in monograph shall be regarded as a non-extraneous foreign matter. Any soil stones send dust and other foreign inorganic matter must be remove before medicinal plant material are used.

Method 100g of the drug was weighed and spread in thin layer. The foreign material detected by inspection the unaided eye or by use of a lens. This was separated, weigh and from the weigh percentage of foreign mater in sample was calculated

2. Determination of loss on drying[ii]:

The loss on drying was determined by taking 2g accurately weighed sample, in a petri dish (tarred evaporating dish) and dried in an oven at 110°C till constant weight. The weight after drying was noted and loss on drying was calculated. The percentage was calculated on the basis of air-dried sample.

3.Determination of Ash value[iii]:

1 g accurately weighed sample was taken in a pre-weighed dried crucible. It was incinerated in a muffle furnace up to 450ºC. The crucible was taken out, self-cooled and weighed immediately. From the weight of the ash, the ash value was derived with reference to the air dried drug. It was calculated and expressed as % w/w.

4. Determination of water soluble extractive[iv]:

About 5g accurately weighed, sample was macerated with 100ml of distilled water in a closed flask for 24 hours, shaking frequently during 6 hours and allowed to stand for 18 hours. Filtered rapidly, taking precaution against loss of solvent and 20ml of the filtrate was evaporated to dryness in a tarred flat bottom shallow dish. First dried over water bath and then at 110°C in hot air oven, to constant weight and weight was noted down. From the weight of the residue the percentage of water soluble extractive was calculated with reference to air-dried sample.

5. Determination of alcohol soluble extractive[v]:

About 5g accurately weighed, sample was macerated with 100ml of methanol of the specified strength (95%) in a closed flask

for 24 hours; shaking frequently during 6hours and allowed to stand for 18 hours. Taking precaution against loss of solvent, it was filtered and 20ml of the filtrate was evaporated to dryness in a tarred flat bottom shallow dish and dried at 110°C to constant weight, and weight was noted down. From the weight of the residue the percentage of alcohol soluble Extractive was calculated with reference to air dried sample.

6. Determination of Water Insoluble Matter[vi]:

Water insoluble matter was determined by dissolving accurately weighed about10g drugs in water. It was allowed to solubilized. The solution was filter through the previously weighed filter paper. Filter paper dried in oven along with funnel. The percentage of insoluble matter was calculated from the final and initial weights of filter paper.

7.Determination of acid insoluble Ash[vii]:

Acid insoluble ash is the residue obtained after boiling the total ash with dil. hydrochloric acid and igniting the remaining insoluble mater. This is measure the amount of silica and siliceous earth. The ash obtained from the total ash content, was boiled for five minutes with 25ml of dilute hydrochloric acid, the insoluble matter was collected on an ash less filter paper, washed with hot water and ignited to constant weight. The percentage of acid insoluble ash was calculated with reference to air-dried sample.

8. Determination of pH[viii]:

A 10% w/v aqueous solution of the samples was prepared, it was filtered and pH of the filtrate was estimated by filter paper and electric pH meter.

9.The specific gravity[ix]:

The specific gravity of a liquid is the weight of a given volume of the liquid at 250 (unless otherwise specified) compared with the weight of an equal volume of water at the same temperature, all weighing being taken in air**.**

10.TEST FOR AFLATOXINS[x]:

Caution: Aflatoxins are highly dangerous and extreme care should be exercised in handling Aflatoxin materials. This test is provided to detect the possible presence of Aflatoxins B1, B2, G1 and G2 in any material of plant origin. Unless otherwise specified in the individual monograph, use the following method.

Zinc Acetate – Aluminium Chloride Reagent: Dissolve 20g of zinc acetate and 5g of aluminium chloride in sufficient water to make 100ml.

Sodium Chloride Solution: Dissolve 5g of sodium chloride in 50ml of purified water.

Aflatoxin Solution: Dissolve accurately weighed quantities of Aflatoxin B1, Aflatoxin B2, Aflatoxin G1 and Aflatoxin G2 in a mixture of chloroform and acetonitrile (9.8: 0.2) to obtain a solution having concentrations of 0.5µg /per ml each for Aflatoxin B1 and G1 and 0.1µg per ml each for Aflatoxins for B2 and G2.

Permissible Limit of Aflatoxins:

S. No.	Aflatoxins	Permissible Limit
1.	B1	0.5 ppm
2.	G1	0.5 ppm
3.	B2	0.1 ppm
4.	G2.	0.1 ppm

Observations & Results:

1. **Organoleptic Characteristic of JKC and JKGV:**

Table No.2 Showing the organoleptic characters of JKC and JKGV:

Sr. No.	Character	JKC	JKGV
1.	Colour	Light Brown	Shiny Blackish Brown
2.	Odour	Characteristic	Characteristic
3.	Taste	Bitter	Bitter
4.	Appearance	Powder	Round Vati
5.	Touch	Rough	Smooth

2. Physico-Chemical Characteristic of JKC and JKGV:

Table No.3 Showing the Physico-Chemical characters of JKC and JKGV:

S. N.	Parameter	JKC	JKGV
1.	pH (10% aqueous sol.)	5.4	5.6
2.	Loss on drying (110^0C)	6.0 % w/w	6.0 % w/w
3.	Total ash	7.86% w/w	10.44% w/w
4.	Water soluble ash	3.83% w/w	5.09% w/w
5.	Acid insoluble ash	2.19% w/w	2.76% w/w
6.	Water soluble extractive	22.40% w/w	63.35% w/w
7.	Alcohol soluble extractive	25.79% w/w	39.90% w/w
8.	Particle size	44 mess	-
9.	Disintegration time	-	75 min
10.	Friability test	-	0.059%

2. Aflatoxin of JKC and JKGV:

Table No.4 Showing the Aflatoxin of JKC and JKGV: -

Aflatoxin content	Limits	Results JKC	Results JKGV	Test method
Aflatoxin B_1	0.5 PPB	ND	ND	API Part 1, Vol. -4
Aflatoxin B_2	0.1 PPB	ND	ND	API Part 1, Vol. -4
Aflatoxin G_1	0.5 PPB	ND	ND	API Part 1, Vol. -4
Aflatoxin G_2	0.1 PPB	ND	ND	API Part 1, Vol. -4

Note: - ND = Not Detectable

4. Microbiological analysis of JKC and JKGV:

Table No. 5 Showing the Microbiological analysis of JKC and JKGV: -

Sr. No.	Microbiological test	Limits	Results JKC	Results JKGV	Test method
1.	Total bacterial count	100000 cfu/gm	30000 cfu/gm	5000 cfu/gm	API Part 1,Vol.-4
2.	Total fungal count	1000 cfu/gm	100 cfu/gm	80 cfu/gm	API Part 1, Vol.-4

DISCUSSION:

The analytical study was carried out with a view to know the particular chemical configuration of the raw and final product and also to point out the physico- chemical changes and effect of processes.

Organoleptic tests -

In concern with organoleptic tests of the JKC *and* JKGV was tested for *Shabda, Sparsha, Rupa, Rasa* and *Gandha, Pariksha*. The JKC appeared rough, light brown powder with bitter taste. The JKGV

appeared smooth, Blackish brown round *Vati* with bitter taste.

Physico-chemical parameters –

1. pH– The pH of JKC and JKGV was noted to be 5.4 and 5.6, which is suggest its slightly acidic nature.

2. Loss on drying – Value of LOD of JKC and JKGV *was* noted to be 6% w/w and 6%w/w which indicates some moisture content present in the *Kwatha* and *Ghana Vati*. Material absorbed moisture during the storage. In conjunction with a suitable temperature moisture will lead to the activation of enzymes and given suitable condition, to the proliferation of living organism. Hence, moisture contents may affect the quality of the drug. Although the loss in weight, in the samples, principally due to water, small amount of other volatile materials will also contribute to the weight loss. For materials i.e. starch, fibers etc. which contain little volatile material, direct drying process (105^0C) to constant weight can be employed. This test was done just after 10 days of preparation.

3. Ash Value – Total 7.86% ash value was obtained in JKC and in JKGV total ash value 10.44% w/w was obtained. Which indicate that most of the part of formulation was organic matter, which burnt out and oxidized. The total ash usually consist mainly carbonates, phosphates, silicates and silica. Ash value of JKGV sample was higher than JKC samples is indicative of presence of more inorganic materials in that sample.

4. Acid insoluble ash –Acid insoluble ash of JKC and JKGV was obtained respectively 2.19% w/w and 2.76% w/w. which indicate most of the parts of the formulation are organic.

.**5. Water soluble ash**- Water soluble ash of JKC and JKGV was obtained respectively 3.83% w/w and 5.09% w/w. It indicates that solubility of JKC and JKGV in water is very less.

6. Water soluble extractive - Water soluble extractive of JKC and JKGV was obtained respectively 22.40% w/w and 63.35% w/w. Because of high concentration of active ingredients.

7. Alcohol soluble extractive- Alcohol soluble extractive of JKC and JKGV was obtained respectively 25.79% w/w and 39.90% w/w. The alcohol soluble extractive value of JKGV is more than JKC which indicating presence of more alcohol soluble contain in JKGV.

8. Particle size - Particle size is one of the factors which will affect dissolution and absorption of drug. Particle size and surface area of a solid drug are inversely related to each other. Smaller the drug particle greater will be the surface area available for chemical reaction and thus more will be the activity of drug. JKC coarse powder was throughout 44 no. Sieve.

9. Disintegration time of JKGV - Disintegration time of JKGV was obtained 75 minutes, According to S R Lab Jaipur report.It is very high. Due to its shortage, it will not be able to function with immediate effect. There may be many reasons for the disintegration time to be longer. Such as compositional binders (starch, cellulose etc) Lubrication, hardness etc.

10.Friability test of JKGV: Friability test of JKGV was obtained 0.059% on 25 rpm or 100 rotations in 4 min.

11.Aflatoxins test: Aflatoxin test of both JKC and JKGV was obtained not detectable in B_1, B_2, G_1, G_2.

12. Microbiological analysis: Total bacterial and fungal count in both JKC and JKGV were normal in range. it shows that both samples were good no any contaminations were there.

CONCLUSION: Analytical test results showed JKC & JKGV were within normal limits but comparatively JKGV sample results was good in these perameters like Total ash, Water soluble ash, Acid insoluble ash,Water soluble extractive , Alchohal soluble extractive .Total bacterial count was little high in JKC but as in normal limits. Hence, these quality control parameters can be considered as tool for preparation, safety and efficacy of formulations.

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