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FORMULATION AND PHYSICOCHEMICAL EVALUATION OF A UNANI COMPOUND: *KUSHTA SANKH*

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ABSTRACT

KEYWORDS:

Conch, Kushta, Sankh.

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Kushtajat are the backbone of Unani system of medicine. It is the finest powder form of the therapeutic preparations obtained by calcination and is chiefly based on metals, minerals and animal origin drugs. These formulations are more popular and superior over other medicines of Unani system because *kushta* is easily absorbed in the human body and is highly efficacious in action. This attracts the interest of patients as well as pharmaceutical companies globally in *kushtajat*. Conch shell is one such drug which is used in the form of *Kushta* and is said to be very effective in hyperacidity, colic, biliousness, dysentery and jaundice. At present there are no standard quality control parameters of *Kushta sankh*. So in this research article physicochemical analysis of *Kushta sankh* on classical as well as modern parameters were worked out to lay down the standards. The results showed that the prepared *Kushta sankh* was tasteless, odourless, white in colour, smooth to touch, lusterless, floating test, fineness test and wall stick test were positive; Hausner's Ratio and compressibility Index were 1.43 ± 0.02 and $30.36 \pm 0.03\%$; pH in 1 % and 10 % solution were 10.43 ± 0.03 and 11.39 ± 0.01 ; loss of weight on drying and loss of weight on ignition were $0.07 \pm 0.00\%$ and 0.83 ± 0.02 ; total ash, acid insoluble ash, water soluble ash and water insoluble ash were 96.57 ± 0.05 , $92.81 \pm 0.3\%$, $4.24 \pm 0.04\%$ and $87.86 \pm 0.2\%$; water soluble extractive value was $3.42 \pm 0.02\%$. These results can be taken as dependable standards for *Kushta sankh*.

INTRODUCTION:

Metals play a vital role in human body. These metals are present in human body in different concentration and combination at different sites, and help the particular body tissues to carry out their regular activities. Any disproportion in them disturbs the body metabolism [1]. Unani system of medicine has plentiful description of such metals and minerals which are used fruitfully in the management of various diseases. These drugs are used mostly in calcined forms known as *kushta* in Unani-Tibb, *bhasma* in Ayurveda and *parpam* in Siddha [2-3]. *Kushta sankh* (Conch shell ash) is one such medicine which is used internally in the form of *Kushta*. It is a product of incineration of the conch shell. Conch is the empty shell of *Turbinella rapa* or *Xanachus pyrum*, a marine gastropod [4]. It is known by different vernacular names like *sankh*, *halzoon*, *safaid mohra* etc [5]. It is of two types. Those shells which have its involution from left to right are called *Dakshinvarta* and those which have from right to left are called *Vamavata*. The latter is ideal for medicinal use [6].



Fig1. Both varieties of *sankh*

The chemical composition of *sankh* is CaCO_3 [7]. Its *Kushta* is used in ulcers, dyspepsia, gonorrhoea, colic, dysentery, jaundice, tympanitis and flatulence. It is also used to treat catarrh, sore throat, cough and asthma [8]. Although *Kushta sankh* is widely used, there are no scientific reports available about the method of preparation and quality control parameters of this famed Unani formulation. Considering all these facts, a systematic and scientific study of *kushta sankh* was carried out with respect to its physicochemical standardization. The results obtained were treated as standards for *Kushta sankh*.

MATERIAL AND METHODS

Sankh, *sirka* and *leemun* were purchased from local market of Bangalore. Alcohol was purchased from a chemical shop of Bangalore and was of analytical grade.

Method of detoxification of *sankh*

Sankh was dipped overnight in *sirka* and boiled for 2-3 hrs on the next day. Afterwards it was washed with plain water [9].



Sankh overnight dipped in *sirka*



Sankh after 3 hr boiling



Detoxified *sankh*

Method of preparation of *Kushta Sankh*

Kushta was prepared as per *Kitab ul taklees* but with a slight modification i.e. instead of using the cow dung cakes it was prepared in muffle furnace. 60 gm of *sankh musaffa* was dipped in water for 8 days. Then after 8 days, it was dipped in alcohol for 3 days. Afterwards it was placed in muffle furnace in a crucible (Fig. 1). Heat pattern followed was according to praveen et al [10]. The peak temperature (680°C) was maintained at 70 ± 5 minutes, above 600°C temperature was maintained for 20 ± 5 minutes and above 500°C temperature was maintained for 25 ± 5 minutes. After cooling of furnace *sankh* (Fig.2) was removed cautiously (Fig. 2) and was powdered separately in mortar. Later *Kushta sankh* (Fig. 3) was preserved in an air tight bottle.

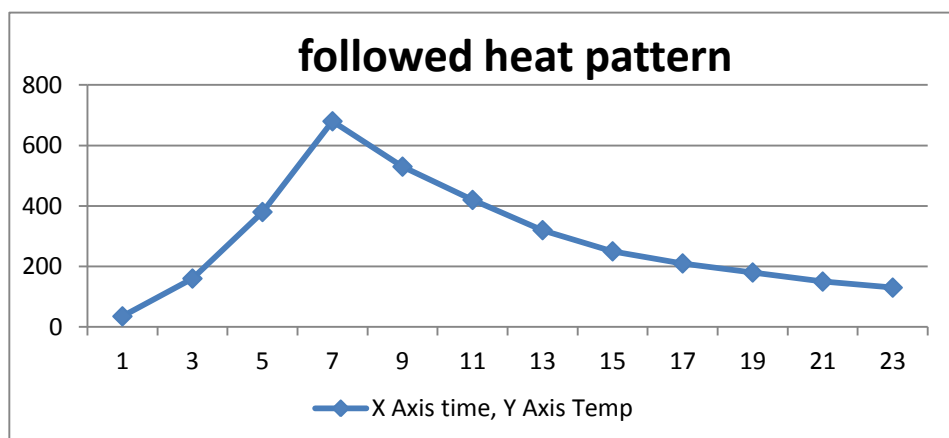


Fig.1 *Sankh musaffa*



Fig.2 *Sankh* after removal from furnace



Fig. 3 *Kushta sankh*

Physicochemical parameters

The prepared *kushta sankh* was evaluated for classical parameters like organoleptic properties, floating test, fineness test, finger test etc. and for modern parameters like bulk and tapped density as per Nuka et al [11], hausner's ratio as per Devi et al [12], carr's index as per Mandal s et al [13], pH and loss of weight on drying as per Physicochemical standards of Unani formulation [14], total ash, acid insoluble ash, water soluble ash, water insoluble ash as per Unani pharmacopoeia of India [15-16], water soluble extractive value as per Indian pharmacopoeia [17] and loss of weight on ignition as per Ayurvedic pharmacopoeia of India [18].

RESULTS & DISCUSSION

The prepared *Kushta sankh* was tasteless, odourless, white in colour (Fig. 3), smooth to touch and lusterless. (Table no.3) Floating test (Fig. 4), finger test (Fig. 6) and wall stick test were positive. (Table no.3) These parameters satisfied the requirement of standard *Kushta* according to classical literature. The mean value of bulk density and tapped density of *kushta sankh* were 0.35 ± 0.1 gm/ml and 0.55 ± 0.00 gm/ml respectively (Table no. 4). The mean value of Hausner's Ratio and Compressibility Index were 1.43 ± 0.02 and $30.36\pm 0.03\%$ respectively (Table no.4) indicated poor flowability of *kushta sankh*. pH in 1 % and 10 % solution were 10.43 ± 0.03 and 11.39 ± 0.01 respectively (Table no.4) indicated the alkaline nature of the finished product. The mean percentage of loss of weight on drying and loss of weight on ignition were $0.07\pm 0.00\%$ (Table no.4) and 0.83 ± 0.02 (Table no.4) respectively indicated very less moisture in the compound formulation. The mean percentage value of the total ash, acid insoluble ash, water soluble ash and water insoluble ash were 96.57 ± 0.05 , $92.81\pm 0.3\%$, $4.24\pm 0.04\%$ and $87.86\pm 0.2\%$ respectively (Table no.4) specify very high inorganic content in *kushta*. The mean percentage of the water soluble extractive value was $3.42\pm 0.02\%$ (Table no.4) indicated the presence of very less amount of water soluble content.

Table 1: Observations while detoxification

| | Parameters | Before detoxification | After detoxification |
|----|-----------------------------|-----------------------|----------------------|
| 1. | Weight | 100 gm | 93 gm |
| 2. | pH of <i>Sirka</i> | 3.11 | 6.65 |
| 3. | Volume of <i>Sirka</i> (ml) | 500 ml | 116 ml |

Table 2: Physical properties of Raw *Sankh*

| S.No | Properties | Raw <i>Sankh</i> |
|------|--------------|------------------|
| 1. | Nature | Hard |
| 2. | Lusture | Pearly |
| 3. | Transparency | Opaque |

Table 3: Preliminary tests of Raw *Sankh* and *Kushta Sankh*

| Properties | Raw <i>Sankh</i> | <i>Kushta Sankh</i> |
|-----------------|------------------|---------------------|
| Colour | White | White |
| Odour | Odourless | Odourless |
| Taste | Tasteless | Tasteless |
| Touch | Smooth | Smooth |
| Floating test | Absent | Present |
| Fineness test | Fine | Very fine |
| Wall stick test | Absent | Present |
| Finger test | Negative | Positive |
| Lusture | Present | Absent |



Fig .4 Floating test

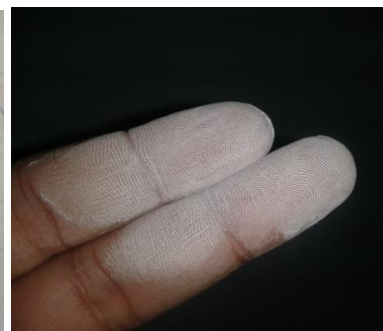
Fig. 5 Floating of rice over *Kushta sankh*

Fig. 6 Finger test

Table 4: Physicochemical Tests of *Kushta Sankh*

| Parameters | 1 | 2 | 3 | Mean \pm SEM |
|--------------------------------|-------|-------|-------|------------------|
| Bulk Density (gm/ml) | 0.37 | 0.33 | 0.37 | 0.35 \pm 0.1 |
| Tapped Density (gm/ml) | 0.54 | 0.56 | 0.57 | 0.55 \pm 0.00 |
| Hausner's Ratio (HR) | 1.43 | 1.39 | 1.47 | 1.43 \pm 0.02 |
| Compressibility Index (%) | 30.30 | 30.41 | 30.38 | 30.36 \pm 0.03 |
| pH (1%) | 10.45 | 10.48 | 10.38 | 10.43 \pm 0.03 |
| pH (10%) | 11.38 | 11.43 | 11.37 | 11.39 \pm 0.01 |
| Loss of weight on drying (%) | 0.07 | 0.07 | 0.08 | 0.07 \pm 0.00 |
| Loss of weight on Ignition (%) | 0.88 | 0.78 | 0.83 | 0.83 \pm 0.02 |
| Total ash (%) | 96.59 | 96.46 | 96.66 | 96.57 \pm 0.05 |
| Acid insoluble ash (%) | 92.65 | 92.43 | 92.37 | 92.81 \pm 0.3 |
| Water insoluble ash (%) | 87.36 | 88.18 | 88.06 | 87.86 \pm 0.2 |
| Water soluble ash (%) | 4.17 | 4.25 | 4.31 | 4.24 \pm 0.04 |
| Extractive value (%) | 3.37 | 3.46 | 3.43 | 3.42 \pm 0.02 |

CONCLUSION:

So far very little work is performed regarding standardization of *kushtajat*. This study gave elaborated information about the purification procedure, method of preparation and quality control parameters of *Kushta sankh* by analyzing it on classical as well as on various modern parameters but further studies like animal studies, XRD, particle size etc should also be carried out on *kushta sankh* so as to convince the scientific community about safety and higher efficacy of *kushtajat*.

REFERENCES:

1. Rasheed A, Marri A and Naik MM, (2011), Standardization of Bhasma: importance and prospects. *Journal of Pharmacy Research*, 4 (6), 1931-33.
2. Bajaj S and Vohora SB, (2000), Anti-Cataleptic, Anti-Anxiety and Anti-Depressant Activity of Gold Preparations used in Indian Systems of Medicine. *Indian Journal of Pharmacology*, 32, 339-346.
3. Chopra RN, Chopra IC, Handa KL, Kapur LD, (1982), *Chopra's Indigenous Drugs of India*. 2nd Ed. Calcutta: Academic Publisher; p-461-4.
4. Gopal R, Vijayakumaran M, Venkatesan R and Kathirolu S, (2008), Marine organisms in Indian medicine and their future prospects. *Natural Product Radiance*, 7(2), 139-145.
5. Rehman QA, (2003), *Israr Seena ba Seena*. New Delhi: Idara Kitabus Shifa; p-70.
6. Thootam PJ, (2005), *Modernizing Ayurveda*. 1st EDn. Chennai: Sura Books Pvt Ltd; p- 39
7. Ranade M and Chary DL, (2013) Comparison of two purification products of *sankh bhasma*: a prospective randomized control trial. *Ancient science of life*, 4(1), 160-162.
8. Nadkarni KM and Nadkarni AK, (1976), *Indian Materia Medica*. Bombay: Popular Prakashan Pvt. Ltd; p-135-231.
9. Hafeez A. (ynm), *Sanatal Takless*. New Delhi: Central Council of Research in Unani Medicine; p-87.
10. Tate PM, Patgiri BJ and Prajapati PK, (2009), Pharmaceutical standardization of Naag bhasma, *AYU*; 30(3), 300-309.
11. Nuka R, Potu AR and Nandan R.N, (2012), Formulation Development and In-Vitro Evaluation of Ramipril Micropellets. *World Journal of Pharmaceutical research*, 2(1), 76-87.
12. Devi SKU, Thiruganesh R and Suresh S, (2010), Preparation and characterization of pectin pellets of Aceclofenac for colon targeted drug delivery. *Journal of Chemical and Pharmaceutical Research*, 2(1), 361-374.
13. Mandal S, Ratan GN, Mulla JS, Thimmasetty J, Kaneriyaa A, (2010), Design and In Vitro Evaluation of Gastro Retentive Sustained Release Tablets of Tizanidine Hydrochloride. *Indian Journal of Novel Drug Delivery*, 2(4), 144-152.

14. Anonymous, (2006), Physicochemical Standards of Unani Formulations. New Delhi: CCRUM; p-142-145.
15. Anonymous, (2007), The Unani Pharmacopoeia of India. New Delhi: GOI. Dept. of AYUSH; p-116.
16. Anonymous, (2007), The Unani Pharmacopoeia of India. New Delhi: GOI. Dept. of AYUSH; p-134.
17. Anonymous, (2007), Indian Pharmacopoeia. Ghaziabad: Indian pharmacopoeia commission; p-191.
18. Anonymous, (2008), The Ayurvedic Pharmacopoeia of India. 1st Ed. New Delhi: GOI. Dept of AYUSH; p-73.