NEED OF AYURVEDIC ALKALIZER (ANTAH-PARIMARJANA KSHARA) IN PRESENT TIME: AN EXPERIMENTAL STUDY

Singh Vivek¹*, Yadav SS², Goswami PK³

¹Junior resident Dept. of Samhita & Sanskrit Faculty of Āyurveda IMS, BHU, Varanasi, India
²Assistant Prof. Dept. of Samhita & Sanskrit Faculty of Āyurveda IMS, BHU, Varanasi, India
³Prof. and head of Dept. of Samhita & Sanskrit Faculty of Āyurveda IMS, BHU, Varanasi, India

Received 09-12-2013; Revised 07-01-2014; Accepted 05-02-2014

*Corresponding Author: Vivek singh
Junior resident Dept. of Samhita & Sanskrit Faculty of Āyurveda IMS, BHU, Varanasi, Email: vivek.imsbhu@gmail.com, Contact No.09453218583

ABSTRACT

Ayurveda, the science of life covers a wide range of subjects and issues of living beings in relation to total approaches of individual development and health care. Different Ayurvedic literature preaches wide and in depth knowledge of ideal living including promotive, preventive and curative aspect of health sciences. It is observed that in modern time many of diseases are arises due to human body’s internal environment become acidic because of major dietetic change with modern civilization. This results in the origin of many new diseases. This problem is seriously discussed by acharyas in ancient time and concept of antah-parimarjana kshara is described for the neutralization of acids to prevent its consequences.

Keywords: Antah-parimarjana kshara, Alkalizer, Ksharatantravid, Ksharodaka, Ayurveda Samhita.

INTRODUCTION

Acid-base balance in the body is very important for positive health. In the beginning of creation, life evolved in ocean environment, and even today human body’s internal environment remains in alkaline ranges of 7.35-7.45¹. Our enzymatic, immunological and repairing mechanism functions their best in an alkaline environment. The pH and net acid load in the human diet, has been considerable change from the hunter-gather civilization to the present². Gradually with the agricultural revolution and even more recently with marked industrial revolution, there has been decrease in potassium (K) content compared to sodium (Na) found in the diet³. The ratio of potassium to sodium content in the diet has been reversed as K/Na ratio, previously was 10 to 1 where as in the modern (western) diet ratio of K/Na is 1 to 3³. Today’s the diet of humans is poor in magnesium and potassium as well as fiber and rich in saturated fat, simple sugar, sodium, and chloride as compared to the pre-agricultural period⁴. These resultant of dietetic changes induce metabolic acidosis⁵. This type of diet is mismatched to the genetically determined nutritional requirements⁶. The acidic condition in human body leads to several adverse effects on cell metabolism; including impaired energy production, fluid accumulation (edema) and increases in free radical production. Consequently it leads to a series of health problems including loss of bone mineral, loss of muscle mass, a reduction in growth hormone and the development of kidney stone⁶.

All the three major samhitas have elaborately discussed about the use of kshara in diet and medicine. The use of kshara is described for both external and internal procedures in the treatment. In ancient India use of kshara was prevails as a secondary science supporting medical/surgical schools. Caraka-samhita has narrated that in ancient India there were especially skilled professionals known as ksharatantravid⁹ (expert of external and internal application of kshara). These skilled professional have expertize knowledge in preparations and administrations of kshara both internally and externally. Different type of preparations of kshara has been explained in classical text to use as combined or single recipes¹⁰ in different diseases both externally and internally¹⁰.

MATERIALS AND METHODS

For validation of principles of Antah-parimarjana Kshara available in Ayurved samhitas on the modern scientific parameter after review of literatures, present experimental works is grossly divided into 4 parts.

PART 1:- Collection and authentication of crude kshara drugs:- Following plant originated substances are used for preparation of kshara.
PART 2:- Preparation of antah-parimarjana kshara:-

After proper collection of above plant materials are dried for preparation of plant ashes, the plant materials are burnt out as soon as possible to avoid further contamination and degradation by insects, fungus etc. Plant ashes are prepared as per guidelines of Ayurved samhitas.

- Each and every plant materials are burnt separately in a windless place i.e. by using the tin drum.
- When the fire is extinguished the dried plant material are burn putting in less quantity continuously in slow rate for proper combustion of previous bolus, till total material of a single plant burned.
- These burned materials are allowed for self cooling on room temperature.
- Then ash are removed from drum and stored in earthen pot with air tight lid.
- Ashes are mixed with six time distilled water in glass conical flask and allowed to settle down for about 1-2 hours.
- Finally the supernatant fluid is collected in a separates glass container.
- The collected fluid are filtered drop by drop through a Whatman’s Filter Paper into a clean glass bottle, this filtrate are ksharodaka (i.e.Paniya Kshara =Alkaline water) used as antah-parimarjana and after measuring this was stored in air tight bottle for further assessment. (unboiled ksharodaka)
- In second opinion (described by Dalhan), this ksharodak was reduced through boiled at mild heat up to 3/4 th volume of initial volume (Boiled ksharodaka = Sterilized alkaline water), then the final solution was stored in air tight glass container.

The residual ashes are again mixed with four times of water and the same procedure is repeated at least 2-4 times in order to take away all the alkaline material from ashes.

Ultimately the ashes remained as a neutral residue which should be thrown.

The collected fluid is then filtered drop by drop through a double Whatman’s Filter Paper into a clean glass bottle.

This filtrate was measured and boiled at mild heat (about 40-70 degree centigrade) with slowly stirring by glass rod for preparation of powder of Kshara for antah-parimarjana formulation.

This Kshara powder was measured and stored in air tight glass container after self cooling at room temperature.

This above procedure was applied for all plant material separately and resultant ksharodaka and kshara powder of each and every plant material stored in separate air tight glass container.

Same procedure was also applied for obtained traditionally prepared plant ash samples from Assam.

PART 3:- PHYSICAL PROPERTIES OF KSHARA AND KSHARODAKA.

A: Orgenoleptic study of different samples of kshara and ksharodaka

Rupa (Color), Rasa (Taste), Gandha (Odour), Sparsha (Touch) - Manual assessment by 3 – 4 healthy persons.

B: pH Measurement of different samples of Ksharodak.

The pH of Ksharodaka was measured by “Systronics pH System 361” After calibration through the provided Buffer solutions. Measurement was done in the following ways –

- First of all calibrated pH meter glass electrode and temperature electrode are washed by distilled water and swiped by tissue paper for removing extra water from electrodes.
- That pH meter was kept in turned on mode.
- Sample solution (Ksharodaka) was taken to test pH at about 25°C by putting electrodes in the solution.
- After putting electrodes (both temperature and pH electrode) in the solution, pH of solution recorded.
- This method was used for all the first filtered solution (Ksharodaka) and required prepared solution of Kshara.

C: Specific gravity of different samples of Ksharodak

Specific gravity of Ksharodaka was measured with the help of specific gravity bottle (Pycnometer).

PART 4:- XRF (X-ray florescence spectrometer) STUDY OF DIFFERENT SAMPLES OF KSHARA

This study was conducted with the help of Department of Chemical Engineering, IIT, BHU,Varanasi. This study was mainly done for the analysis of Inorganic composition of Kshara powder (except hydrogen, carbon, nitrogen, oxygen).This was done in following ways –

- Every kshara powder was prepared from boiling of its corresponding Ksharodaka, round pellet was prepared then inserted in XRF machine for analysis of inorganic composition of each and every kshara samples.
- Composition of samples data was collected from XRF result display through print device.
**OBSERVATION AND RESULTS**

**PHYSICAL PROPERTIES OF KSHARA AND KSHARODAKA:-**

**Table 1: Orgenoleptic properties of different samples of kshara powder**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of kshara</th>
<th>Rupa (Colour)</th>
<th>Rasa (Taste)</th>
<th>Gandha (Odour)</th>
<th>Sparsha (Touch)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Assam kadali k.</td>
<td>Chocolate brown</td>
<td>Specific taste with salty-pungent predominance.</td>
<td>Mild specific odour with no clear-cut differentiability</td>
<td>Dry powder having feathery sensation and finger feels smoothness.</td>
</tr>
<tr>
<td>2.</td>
<td>BHU kadali k.</td>
<td>Dirty white</td>
<td>Specific taste with predominance of pungent-bitterness.</td>
<td>Mild specific odour with no clear-cut differentiability</td>
<td>Dry powder having feathery sensation and finger feels smoothness.</td>
</tr>
<tr>
<td>3.</td>
<td>Tilnal k.</td>
<td>Creamy white</td>
<td>Specific taste with salty-bitterness predominance</td>
<td>Mild specific odour with no clear-cut differentiability</td>
<td>Dry powder having gritty sensation and finger feels smoothness.</td>
</tr>
<tr>
<td>4.</td>
<td>Narikale k.</td>
<td>Pure white</td>
<td>Specific taste with predominance of salty bitterness</td>
<td>Mild specific odor with no clear-cut differentiability</td>
<td>Dry powder having gritty sensation and finger feels smoothness.</td>
</tr>
<tr>
<td>5.</td>
<td>Palasha k.</td>
<td>Dark brown</td>
<td>Specific taste with salty-bitterness.</td>
<td>Mild specific odor with no clear-cut differentiability</td>
<td>Dry powder having feathery sensation and finger feels smoothness.</td>
</tr>
<tr>
<td>6.</td>
<td>Matikalaya (Masha) k.</td>
<td>Mica brown (light brown)</td>
<td>Specific taste with light salty pungent.</td>
<td>Mild specific odor with no clear-cut differentiability</td>
<td>Dry powder having gritty sensation and finger feels smoothness.</td>
</tr>
</tbody>
</table>

Different Kshara powder samples

![Fig.1 Assam kadali kshara](image1)

![Fig. 2 BHU kadali kshara](image2)

![Fig. 3 Tilnal kshara kshara](image3)
Orgenoleptic properties of different samples of *ksharodaka*

**Table 2: Orgenoleptic properties of different samples of *ksharodaka***

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Name of <em>ksharodaka</em></th>
<th>Rupa (Colour)</th>
<th>Rasa (Taste)</th>
<th>Gandha (Odour)</th>
<th>Sparsha (Touch)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Assam kadali <em>ksharodaka</em></td>
<td>Light straw colour</td>
<td>Specific taste with pungent predominance</td>
<td>Mild specific odour with no clear-cut differentiability</td>
<td>Mild sliminess</td>
</tr>
<tr>
<td>2.</td>
<td>BHU kadali <em>ksharodaka</em></td>
<td>Very light yellow</td>
<td>Specific taste with salt-pungent predominance</td>
<td>Mild specific odour with no clear-cut differentiability</td>
<td>Mild sliminess</td>
</tr>
<tr>
<td>3.</td>
<td>Tilnal <em>ksharodaka</em></td>
<td>Very light yellowish white</td>
<td>Specific taste with pungent –salty predominance</td>
<td>Mild specific odour with no clear-cut differentiability</td>
<td>Mild sliminess</td>
</tr>
<tr>
<td>4.</td>
<td>Palasha <em>ksharodaka</em></td>
<td>Light brown</td>
<td>Specific taste with pungent predominance</td>
<td>Mild specific odour with no clear-cut differentiability</td>
<td>Mild sliminess</td>
</tr>
<tr>
<td>5.</td>
<td>Narikale <em>ksharodaka</em></td>
<td>Colourless saline water like with slight turbidity.</td>
<td>Specific taste with salty-pungent predominance</td>
<td>Mild specific odour with no clear-cut differentiability</td>
<td>Mild sliminess</td>
</tr>
<tr>
<td>6.</td>
<td>Matikalaya <em>ksharodaka</em></td>
<td>Blackish brown</td>
<td>Specific taste with pungent predominance</td>
<td>Mild specific odour with no clear-cut differentiability</td>
<td>Mild sliminess</td>
</tr>
<tr>
<td>7.</td>
<td>Sarson (Sarshapa) <em>ksharodaka</em></td>
<td>Light straw color (Pale yellow)</td>
<td>Specific taste with pungent predominance</td>
<td>Mild specific odour with no clear-cut differentiability</td>
<td>Mild sliminess</td>
</tr>
</tbody>
</table>

Orgenoleptic properties of different samples of Boiled (Reduced to 3/4<sup>th</sup> volume) *ksharodaka*:-

**Table 3: Orgenoleptic properties of different samples of Boiled (Reduced to 3/4<sup>th</sup> volume) *ksharodaka***

<table>
<thead>
<tr>
<th>Sr.N.</th>
<th>Name of Boiled <em>ksharodaka</em></th>
<th>Rupa (Colour)</th>
<th>Rasa (Taste)</th>
<th>Gandha (Odour)</th>
<th>Sparsha (Touch)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Assam boiled kadali <em>ksharodaka</em></td>
<td>Straw colour (slight darker than un-boiled)</td>
<td>Specific taste with pungent predominance</td>
<td>Mild specific odour with no clear-cut differentiability</td>
<td>Mild slimy</td>
</tr>
<tr>
<td>2.</td>
<td>BHU boiled kadali <em>ksharodaka</em></td>
<td>Very light yellow (slight darker than un-boiled)</td>
<td>Specific taste with salt-pungent predominance</td>
<td>Mild specific odour with no clear-cut differentiability</td>
<td>Mild slimy</td>
</tr>
<tr>
<td>3.</td>
<td>Boiled tilnal <em>ksharodaka</em></td>
<td>Very light yellow (slight darker than un-boiled)</td>
<td>Specific taste with pungent –bitter predominance</td>
<td>Mild specific odour with no clear-cut differentiability</td>
<td>Mild slimy</td>
</tr>
<tr>
<td>4.</td>
<td>Boiled palasha <em>ksharodaka</em></td>
<td>Light brown (slight darker than un-boiled)</td>
<td>Specific taste with pungent predominance</td>
<td>Mild specific odour with no clear-cut differentiability</td>
<td>Mild slimy</td>
</tr>
<tr>
<td>5.</td>
<td>Boiled Narikale <em>ksharodaka</em></td>
<td>Slight turbid white.</td>
<td>Specific taste with salty-pungent predominance</td>
<td>Mild specific odour with no clear-cut differentiability</td>
<td>Mild slimy</td>
</tr>
</tbody>
</table>
Different ksharodaka and boiled ksharodaka samples:

Fig. 7 From left to right- (i) Boiled tilnal ksharodaka, (ii) Tilnal ksharodaka, (iii) Assam kadali ksharodaka, (iv) Boiled assam kadali ksharodaka, (v) BHU kadali ksharodaka, (vi) Boiled BHU kadali ksharodaka, (vii) Boiled narikale ksharodaka, (viii) Narikale ksharodaka, (ix) Palasha ksharodaka, (x) Boiled palasha ksharodaka.

Fig. 8 Traditionally prepared, Fig. 9 lab prepared

B: pH values of different samples of ksharodaka (at 25 °C):
Bar chart No.1
pH values of different samples of boiled (Reduced to 3/4<sup>th</sup> volume) ksharodaka (at 25<sup>°</sup>C):-
Bar chart No.2

C: Specific gravity of different samples of ksharodaka (at 25<sup>°</sup>C):-Bar chart No.3

Specific gravity of different boiled (Reduced to 3/4<sup>th</sup> volume) ksharodaka (at 25<sup>°</sup>C):-Bar chart No.4

Potassium and sodium comparison of different kshara: Bar chart No.5
Be used, as kshara are rich source of potassium salts. For the prevention of these condition kshara can be used as Ayurvedic alkalizer to maintain acid-base homeostasis of the body in present time as all the ksharas are rich source of potassium salts which is the best alkalizer. All the ksharas shows similar properties as the properties of traditional kshara used in Assam. So it can be applicable (antah-parimarjana) kshara is used as Ayurvedic alkalizer.

On the basis of above results and observations, the internal sterilization in ancient time i.e. boiling upto ¾ th volume. The ksharodaka are not having so much different property with traditional diet in north-eastern subcontinent of India in present time. So all the above kshara having the pH near about 9-12, are also used in traditional diet in north-eastern subcontinent of India with dietetic items like with vegetable and kadhi etc. Boiled ksharodaka are not having so much different property with unboiled ksharodaka means it may be the method of sterilization in ancient time i.e. boiling upto ¾ th volume.

**DISCUSSION**

On the basis of above results and observations, the internal applicable (antah-parimarjana) kshara is used as Ayurvedic alkalizer. As we know that many diseases and its consequences are arise due to lack of dietary alkalinizing minerals and further acid enhancing modern dietetic consumption enhance the body acidic stress leads production of free radicals, auto-immune disorders and micro-nutrient deficiency. For the prevention of these condition Kshara can be used, as kshara are rich source of potassium salts. In today’s societies the case of musculo-skeleton disorder like osteoporosis, osteomalacia and muscular dystrophy and weakness are growing very fast these are mainly due to increase body acidic environment, which also cross the body harmonizing limits. Other complication of free radical damage are increasing day by day, so it produces many oxidative changes like production of auto-immune disorder, endocrine hormonal disturbances (decreases level of growth hormone, thyroid hormone, insulin hormone etc) and even production of cancer. Ultimately these problem have only one solution that is the way of body fluid alkalinization which can be done by use of antah-parimarjana kshara. This is discussed from ancient time and also is in practice in some tribes of north-eastern subcontinent of India in present time. So all the above kshara having the pH near about 9-12, are also used in traditional diet in north-eastern subcontinent of India with dietetic items like with vegetable and kadhi etc. Boiled ksharodaka are not having so much different property with unboiled ksharodaka means it may be the method of sterilization in ancient time i.e. boiling upto ¾ th volume.

**CONCLUSION**

Kshara can be used as Ayurvedic alkalizer to maintain acid-base homeostasis of the body in present time as all the ksharas are rich source of potassium salts which is the best alkalizer. All the ksharas shows similar properties as the properties of traditional kshara used in Assam. So it can be used in present modern societies to prevent all above described health condition.
REFERENCES


Source of support: Nil, Conflict of interest: None Declared