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COMPARISON OF ORGANOLEPTIC, PHYSICAL AND CHEMICAL ANALYSIS OF BHALLATAKA (SEMECARPUS ANACARDIUM LINN) BEFORE AND AFTER ITS SHODHANA PROCESS

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ABSTRACT

The use of plants, animal products and minerals as a source of medicine and food is as old as humanity itself. Ancients discovered medicinal properties of them, developed folk and herbal medicines and finally gave rise to traditional system of herbal medicine such as *Ayurveda*. *Bhallataka* is included in *upvisha gana* of *dhanvantri nighantu* as it has corrosive & hazardous effects. If *Bhallataka* is used after *Shodhana* it does not produces any toxic or hazardous effects but it produces extremely good therapeutic properties & can be used in various *kashtasadhya* disorders like *kushtha, arsha*. *Shodhana* process is said to be very effective to discard the poisonous effects, but it is necessary to create evidence by employing modern scientific technique.

KEYWORDS: Bhallataka, Semecarpus anacardium, shodhan, Istika churna.

INTRODUCTION

Treatment of various disorders by using natural herbs, animal products & minerals is as old as humanity itself. India has a very long tradition of using herbal medicines in various disorders.

Each & every *dravya* of this universe has its own medicinal properties & can be used as *aushadha* if administered by *yukti pramana*.[1]

According to *ayurveda visha* is the substance which after entering in to the body damages the *rasadi saptadhatu* to certain extent which ultimately results in to death.[2]

It is also known as *visha* as it causes sorrowfulness to all living organisms by making them grievously ill & leading to death.

Ojas promotes the health & preserves life. *Visha* possess all the following ten properties which are exactly opposite to the properties of *ojas*. Thus it destroys the *ojas* causing death. *Laghu, ruksha, aashukari, vishada, vyavayee, sukshama, tikshana, vikasee, ushna Anirdeshya rasa- charaka, laghvapaki- sushrita*.[3]

Visha deprive the life of organism by first vitiating *rakta dhatu* & then vitiating all the three *doshas* as well as their respective *ashayas* & finally hampered the function of *hridaya* which ultimately results in to death.[4]

According to modern science poison is defined as the substance administered in whatever way produces ill health, disease or death. It may be synthetic, mineral, animal or vegetable in origin.

Depending on the intensity of *vishalakshana* all the *vishakar dravyas* are classified as

Mahavisha and *upavisha*. *upavisha dravyas* are less toxic than *mahavisha dravyas*.

The process which reduces or completely vanishes the bad qualities i.e. *Vishakta lakshana* of *dravyas* is known as *Shodhana*.[5]

Shodhana is unique process described in *ayurveda* as it not only vanishes the bad qualities or *vishakta lakshana* but it also increases the therapeutic properties of a particular drug. *Shodhana* reduces or completely vanishes all the *bhautic, rasaynik & sahaj ashuddhi.*[6]

There are two types of *Shodhana*: *samanya Shodhana* and *vishesh Shodhana*

Samanya *Shodhana* is described for a group of elements, minerals or medicinal herbs while *vishesh Shodhana* is described for a particular single element, mineral or medicinal herb.

Many times, one or more *Shodhana* processes are described for a single drug but the selection of a particular process should be done on the basis of *kalpa* & *vyadhi* in which that particular drug is supposed to be used. Eg. In *rasatarangini* there are two *Shodhana* processes of *Bhallataka* are described. One in *ishtika churna* & other in *narikel jala*. While treating *pittaj vyadhi* where *ushna, tikshana gunas* of *Bhallataka* are less or not expected then *narikel jala* method should be carried out while in other cases *ishtika churna* method is most preferable.[7]

Bhallataka is included in *upvisha gana* of *dhanvantri nighantu* as it has corrosive & hazardous effects.[8] If Bhallataka is used after *Shodhana* it does not produces any toxic or hazardous effects but it produces extremely good therapeutic properties & can be used in various *kashtasadhya* disorders like *kushtha, arsha*[9] etc. & it also can act as an excellent immunomodulatory agent. Hence this study is carried out to evaluate these extra ordinary changes in the constituent of *Bhallataka* due to *Shodhana*.

AIMS AND OBJECTIVES

Aim: to study the *shodhan* process of *Bhallataka* by organoleptic,physical and chemical analysis.

Objectives: To evaluate the *Shodhana* process of *Bhallataka*. To make comparison of standardization factors of *Bhallataka* before and after *Shodhana*. To collect and compile, *ayurvedic* as well as modern literature on *Bhallataka.*

MATERIALS AND METHODS

Type of study: experimental study

Materials

1 *Bhallataka* seeds

2 *Istika churna* (brick powder)

METHODOLOGY

Collection and sample selection

According to *rasatarangini Bhallataka* ripped fruits which when dropped in water remain at the bottom are *grahya* & can be used for various medicinal purposes.

So 50 pieces of *Bhallataka* fruits having average weight of 1.893 gms are selected according to *grahya-grahyatva lakshana* as described in rasatarangini. Then the caps of *Bhallataka*

fruits are removed with the help of knife. Then the average weight gets reduced to 1.708 gms having average weight reduction of 0.185 gms.

Shodhan process

Bhallataka fruis & *ishtika churna* kept together in a *pottali* & rubbed with moderate pressure till the oil of *Bhallataka* was mixed with *ishtika churna*. Then the processed *Bhallataka* was washed with warm water which results into *shodhit Bhallataka*.

Before & after *Shodhana Bhallataka* fruits & *ishtika churna* were analyzed in the following manner:

- Organoleptic analysis
- Physical analysis
- Chemical analysis

Organoleptic Study[10] organoleptic evolution means conclusions drawn from studies resulted due to impressions on organs of senses. Dwivedi et al has laid down certain parameters and Performa to identify drugs on the basis of *panchendriya pariksha*.

Physical analysis[11] % moisture, %total ash, %acid soluble ash, water soluble ash, extractive values, and ph of all the four samples were performed according to the official methods prescribed in who guidelines on quality control methods for medicinal plant materials and ayurvedic pharmacopeia

Chemical analysis[12] all the four samples were extracted with different solvents, viz. Chloroform, ethanol, benzene and water. The extracts were then subjected to phytochemical screening as per standard methods prescribed in literature. Thin layer chromatography profile tlc of different extracts was carried out as per API guidelines.

RESULTS AND OBSERVATIONS

Organoleptic analysis of *Bhallataka* and ishtikachurna

Oragnoleptic findings Before and after Shodhana process of all samples have been described in Table 1.

Organoleptic analysis	Bhallataka before Shodhana	Bhallataka after Shodhana	Ishtikachurna before Shodhana	Ishtikachurna after Shodhana
Shabda	-	-	-	-
Sparsha	Snigdha	Khara	Khara	Snigdha
Roopa	Krishnabh	Krishna	Rakta	Raktabhkrishna
Rasa	-	Kashay	Kashay	Kashay
Gandha	Not specific	Irritating	Not specific	Irritating

Physical analysis of *Bhallataka* before & after *Shodhana*

Results of % moisture, %total ash, %acid soluble ash, water soluble ash, Extractive values, and pH are given in table 2.

Physical analysis	Bhallataka before Shodhana	Bhallataka after shohana
% moisture	6.2084	4.9027
% total ash	2.8571	22.7039
% acid insoluble ash	0.5083	22.2501
% water soluble ash	1.099	0.3937
% methanol soluble extractive	16.3478	6.7942
% benzene soluble extractive	11.2017	6.6943
% chloroform soluble extractive	21.8313	4.5757
% water soluble extractive	2.9923	0.0342

Chemical analysis

In the preliminary phytochemical screening for commonly occurring plant constituents was carried using the maceration procedure. The testing was carried out on residue obtained by evaporation of water extract of drug. Results of phytochemical screening are listed in the table 3.

Qualitative analysis of *Bhallataka* before and after *Shodhana*

Qualitative analysis	*Bhallataka* before *Shodhana*	*Bhallataka* after *Shodhana*
Test for alkaloids	Alkaloids absent	Alkaloids absent
Test for sugar	Sugar absent	Sugar absent
Test for amino acids	Amino acids absent	Amino acids absent
Test for flavonoids	Flavonoids present	Flavonoids absent
Test for phenols	Phenols absent	Phenols absent
Test for calcium	Calcium absent	Calcium absent
Test for nitrogen	Nitrogen absent	Nitrogen absent

Tlc study of *Bhallataka* and ishtika churna before & after *Shodhana*

Methanol extract of *Bhallataka* and *Isthika churna*, before and after *shodhana* were subjected to TLC analysis using Tolune: Ethyle acetate (8:2) and Methanol: Chloroform (1:9) as a solvent system. The Rf values of the resolved components were determined and detailed results of number of components present are given in table 4.

Sample	Extract	Adsorbant	Solvent system	No of spots observed			Rf values
				Day light	365 nm	Iodine vapour	
Bhallataka before *Shodhana*	Methanol	Silica gel G	Tolune: Ethyle acetate (8:2)	5	5	5	0.26(Yellow) 0.55(Yellow) 0.76(Violet) 0.85(Violet) 0.95(pink) 0.66(Yellow)
Bhallataka after *Shodhana*	Methanol	Silica gel G	Tolune: Ethyle acetate (8:2)	3	4	5	0.26(Yellow) 0.55(Yellow) 0.76(Violet) 0.85(Violet) 0.95(pink) 0.90(Green)
ishtika churna before *Shodhana*	Methanol	Silica gel G	Tolune: Ethyle acetate (8:2)	0	1	1	0.85(Pink) 0.73(Yellow)
Sample – *ishtika churna* after *Shodhana*	Methanol	Silica gel G	Tolune: Ethyle acetate (8:2)	5	5	5	0.47(Grey) 0.61 (Pink) 0.73 (Grey) 0.79 (Pink) 0.87 (Grey)

DISCUSSSION

Organoleptic analysis of *ishtika churna* before & after *Shodhana* shows significant difference in terms of *sparsha, rupa & gandha.* Before *Shodhana* it has *khara sparsha, rakta varna* & not having specific smell but after *Shodhana* it has *snigdha sparsha, raktabh-krishna varna* & irritating smell which means that during *Shodhana* there is absorption of some of the chemical constituents of *Bhallataka* which may be responsible to produce toxic effects.

Physical analysis of *bhallataka* shows significant difference in terms of moisture value, ash value, acid insoluble ash, water soluble extractive, benzene soluble extractive, methanol soluble extractive & chloroform soluble extractive which indicate change in physical properties of *Bhallataka* due to *Shodhana*.

Flavonoid is one of the major chemical constituents of *Bhallataka* which may partly responsible for its corrosive & hazardous effects. In qualitative chemical analysis of *Bhallataka* flavonoid is absent after *Shodhana*. That is why in absence of flavonoids *Bhallataka* may show less corrosive & hazardous effects.

TLC study of *Bhallataka* shows 5 spots each in presence of day light, 365 nm light & iodine vapours before *Shodhana* but after *Shodhana* 3, 4 & 5 spots are detected in presence of day light, 365 nm light & iodine vapours respectively. It indicates there is loss of some chemical constituents of *Bhallataka* during *Shodhana* which may reduce its toxic effects.

In the same way tlc study of *ishtika churna* before *Shodhana* shows no spot in presence of day light while it shows 1 spot each in presence of 365nm light & iodine vapours but after *Shodhana* it shows 5 spots each in presence of day light, 365 nm light & iodine vapours. It indicates that ishtika churna absorbed lots of chemical constituents of *bhallataka* resulting in to its less toxic effects.

CONCLUSION

Thus, *Shodhana* process brought significant changes in physical & chemical constituents of *Bhallataka* which nullifies its toxic effects & enhances its therapeutic properties.

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