

Traditional alcoholic beverages from Ayurveda and their role on human health

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The traditional medical system of Indian Ayurveda indicates availability of a variety of alcoholic beverages named generally as *Madya*, which are hitherto unreported. The objective of this work was to compile and analyze such information obtained from traditional literature in order to document the impact of these beverages on human health. In this work, the Ayurvedic alcoholic beverages are grouped into seven major categories based on the nature of raw materials used and the nature of fermentation. Constituents and medicinal properties of diverse alcoholic beverages falling into each category are compiled. Novel information about the fractions of beverages, quality assessment and changes in properties as a result of storing are highlighted. The means for the application of modern scientific tools and vistas of scientific knowledge to hull out useful information as well as to document and validate the rich tradition of fermented therapeutics of Ayurveda is outlined.

Key words: Ayurveda, *Madya*, Alcoholic beverages, Traditional medicine, Biomedical fermentation

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Ayurveda, the traditional Indian System of Medicine is regarded as one of two living great traditions of the world along with the traditional Chinese System of Medicine. Ayurveda extensively uses plants in addition to certain minerals and animal products. As a result of research investigations, numerous drugs have entered into pharmacopoeia¹. World Health Organization indicated that primary health needs of countries in Africa, Asia and Latin America are met by traditional medicines². Ayurveda has been estimated to meet 70-80% of the healthcare needs of India³. Ayurvedic medicines are of various types, viz. herbal teas, infusions, decoctions, tinctures, capsules & powders, infused oils, ointments, creams, lotions, *arishtas* (fermented decoctions), and *asavas* (fermented infusions)⁴. Ayurveda have also indicated about the medicinal uses of a variety of alcoholic beverages, which are generally named as '*Madya*'. *Madya* are not prescribed in current practice of Ayurveda probably because of the restrictions for their inadvertent use as drinks. This work is intended to compile and analyze the information about such alcoholic beverages obtained from the traditional literature and their translation. This is to ultimately identify the components of such beverages, bring out

the potential medicinal properties and care to be taken while using them as medicines.

Madya are of various kinds like *sura*, *sukta*, *sidhu*, etc. *Ira*, *madira*, *hala* and *balavallabha* are synonyms of *Madya*. All kinds of *Madya* are hot in potency, slightly sweet, bitter and pungent in taste, slightly astringent, sour at the end of digestion. It aggravates *pitta*, mitigates *vata* and *kapha*, causes purgation, digests quickly, creates dryness, non-viscid, kindles digestive fire, helps taste, quick in action, enters into minute pores of the body and cleaning them, spreads quickly and produces looseness of joints⁵. They are beneficial to those having loss of sleep or excess sleep of both lean and stout persons. All of these properties are conferred, if they are used judiciously considering them as medicines. They cause intoxication and act like poisons if they are used otherwise⁶.

Alcoholic beverages from Ayurveda

In this work, Ayurveda beverages are grouped based on the nature of raw materials used and the nature of fermentation, viz. sugar based beverages, fruit based beverages, cereal based beverages, beverages prepared from cereal with or without fruits but contains herbals, *Maireyah* (*triyoni*), *sukta*

(vinegar fermentation) and tonic wines. Among them, *Maireyah* consists of 3 major components (flour, jaggery, and honey), which are fermented, in a two-step process or all 3 components are co-fermented. Other products are formed as a result of single fermentation where sugar, fruits or cereals or a combination of cereal and fruits are used as raw material(s) for effecting fermentation by supporting microbial activity.

Sugar based beverages

Sarkara: It is a wine prepared using sugar. It is sweet smelling, sweet in taste and easily digestible⁶. It is a cardiac tonic and digestive stimulant. It cleans the urinary bladder and alleviates *vata*. It is sweet in *vipaka* (transformed state of ingested substances after digestion), appetizer and stimulant of senses (*indriya bodhana*)^{7,8}.

Gouda/ Gauda: *Gouda* is a wine prepared by using molasses (treacle). It causes elimination of urine, faeces and flatus and increases hunger^{6, 8}. It is refreshing, pungent, bitter and sweet in taste and nourishing⁷. The alcoholic drink prepared using flowers of *Dhataki* [*Woodfordia fruticosa* (L.) Kurz.], water and *guda* (jaggery) is called as *Gauda*. It promotes the power of digestion, complexion and strength⁷. *Gauda* eases passage of flatus and faeces and improves appetite⁸.

Sidhu (sita rasa or sita rasika, pakvarasa sidhu, sasyaka, aksikah-sidhu): The alcoholic preparation made out of uncooked materials is called *sita rasa* or *sita rasika*. Unboiled sugarcane juice is used in this preparation. This type of *sidhu* is inferior in quality^{5,7,9}. It improves digestion, voice and complexion, combat swelling, abdominal disorder, piles and useful for slimming⁸.

If the same *sidhu* is prepared from boiled sugar cane juice, it is called *Pakvarasa sidhu*^{7,10}. It aggravates *vata* and *pitta* and diseases of *kapha*, obesity, dropsy (an excessive accumulation of fluid in any of the tissues or cavities of the body), enlargement of abdomen and haemorrhoids (piles with painful swelling at the anus)⁶. This *sidhu* is better than *sita rasa*. *Pakvarasa sidhu* promotes good voice, digestive power, strength and complexion. It is a cardiac tonic, unctuous and an appetizer. It cures *vivandha* (constipation), *medas* (adiposity), *sopha* (oedema), *arsas* (piles), *svasa* (asthma), *udara* (obstinate abdominal diseases including ascites) and diseases caused by *kapha* relishing wholesome of

kaphaja piles (a type of piles with increase in *kapha*)^{5,7,9}.

The *sidhu* prepared using boiled sugarcane juice fermented with *Dhataki* and after a certain period of fermentation added with little *ghrta* (*ghee*) and jaggery is known as *sasyaka*. *Aksikah-sidhu* is made of decoction of *bibhitaka* [*Terminalia bellirica* (Gaertn.) Roxb.] and jaggery and processed with *Dhataki* flowers. It alleviates anaemia, astringent, sweet, *pitta* alleviating and blood purifier⁹. *Sidhu* made of *jambu* [*Syzygium cumini* (L.) Skeel] fruit is anti diuretic, astringent and *vata* aggravating. *Sidhu* prepared of *madhuka* (*Glycyrrhiza glabra* L.) flower is burning, appetizer, astringent, pacifies *kapha* while aggravates *vata* and *pitta*⁹.

Fruit based beverages

Mardvika/ Kapisa: If an alcoholic preparation is made out of *Mardvika* (dry grapes), then it is called *Mardvika* or *Kapisa*. It is the best among the alcoholic drinks. For this preparation, dry grapes are cooked well and juice is strained out through a piece of cloth. The juice free of astringent taste is suitable for fermentation. This alcoholic preparation is also called *Bhimavikranta* or *Kapisapana*¹⁰. *Mardvika* is unctuous, sweet, laxative, appetizer, carminative (drug curing flatulence), cardiac tonic and nourishing^{9,10}. It promotes strength and semen. It causes *amlapitta* (acidity in stomach) and aggravation of *vata*. It does not cause burning sensation and it alleviates *kapha*. It cures *pandu* (anaemia), *ksaya* (consumption or pulmonary tuberculosis), *meha* (obstinate urinary disorders, including diabetes), *arsas* (piles) and *visama jvara* (typhoid), hemorrhoids and intestinal parasites^{6,7}. Wine prepared from grapes is not contraindicated even in intrinsic hemorrhage because of its non-burning property and sweet taste⁹.

Kharjura: It is a wine prepared from dates. It is slightly inferior in quality in comparison to *mardvika* type of alcoholic drink. It aggravates *vata*, heavy and hard for digestion. It is a cardiac tonic, astringent, sweet and fragrant. It activates the senses (*indriya bodhana*)^{6,7,9,10}.

Jambava: The alcoholic preparation made out of the juice of *jambu* [*Syzygium cumini* (L.) Skeel], jaggery and honey is called *jambava*¹⁰. This helps in the prevention of excretion (*baddha nisyanda*)⁷.

Cereal based beverages

Sura/ kantoli/ kohali/ Yava Sura: *Sura* is prepared by fermenting a mixture of water, flour of rice,

jaggery resembling the beer of the present day. *Sura* cures abdominal lump, enlargement of abdomen, haemorrhoids, duodenal diseases and consumption (pulmonary tuberculosis). It is hard to digest, causes constipation, mitigates *vata* and causes increase of fat, blood, milk, urine and *kapha*⁶. *Sura* is useful for treating emaciation, gaseous abdominal swelling, urinary obstruction, insufficient lactation and piles⁸. It bestows strength, breast milk nourishment and relieves dropsy and dysuria (difficulty and pain in urination)^{5,7}. The alcoholic preparation made out of the *yava* paste (barley) and *masa* (*Phaseolus munga* L.) is called *kantoli* or *kohali*¹⁰. *Yava Sura* prepared from *yava* (barley) causes constipation and not easily digestible⁶. It is *pitta* increasing, slightly induces *kapha* and aggravates *vata*^{8,9}.

Kohalah and Tusambu: *Kohalah* is made of parched barley flour. Others take it as *sura* of cooked rice. It vitiates three *doshas* and acts as non-aphrodisiac⁹. *Tusambu* is prepared by fermenting uncooked and dehusked barley. It is an appetizer, alleviates heart diseases, *panduroga* (anaemia) and worms^{9,10}.

Beverages prepared from cereals and/ or fruits with herbals

Vibhitaka sura: *Sura* prepared from *vibhitaka* [*Terminalia bellirica* (Gaertn.) Roxb.] is easily digestible, good for health, treats wounds, anaemia, leprosy and other skin diseases⁶.

Varuni: The alcoholic drink prepared from *punarnava* (*Boerhaavia diffusa* L.) paste and rice is called *varuni*. It is also prepared from *tala* (*Borassus flabellifer* L.) and *kharjura* (dates) juice. The alcoholic drink prepared of *punarnava* and *salipisti* (dough of rice flour) together mixed with *sura* is also known as *varuni*. *Varuni* is easily digestible like *sura*, mitigates *rhinitis* and pain^{5,7}. *Varuni* shares the properties of *sura*. However, it is light and cures *pinasa* (sinusitis), *adhmana* (flatulence) and *sula* (colic pain)⁷.

Madhuka madya: The alcoholic drink prepared of the flowers of *madhuka* (*Glycyrrhiza glabra* L.) is called *madhuka madya*. It aggravates *vata* and *pitta*⁷.

Aksika (aksiki): The alcoholic preparation made out of the bark of *aksa* [*Terminalia arjuna* (Roxb. ex DC.) Wight & Arn.] and rice grains is called *aksiki*¹⁰. It is a promoter of strength, constipative, astringent, sweet and cooling. It alleviates *pitta* and promotes

blood formation⁷. *Aksiki* improves appetite; good for treating anaemia and worms⁸.

Maireyah (triyoni): It is made by the refermentation of *sura* and *asava* (fermented infusion), prepared separately then combined together which has the effect of both of these preparations. The basic sources of *sura* and *asava* are flour and jaggery, respectively to which honey is added thus making it *triyoni* (three basic sources); alternatively, flour, *asava* and jaggery fermenting together make it *triyoni*. It is sweet, astringent and alleviates piles, *kapha*, *gulma* (gastritis), worms, fat and *vata*^{9,10}.

Sukta (vinegar): The portion prepared by adding rhizomes, roots and fruits along with fat and salt in water is called *sukta*. It produces *raktapitta* (a disease characterized by bleeding from different parts of the body) and *chedana* (which takes away tissues like cutting). It cures *pandu* (anaemia) and *krmi* (parasitic infection). It is purgative, helps in the digestion of food, hot, diuretic, cardiac tonic, alleviator of *kapha* and pungent in *vipaka*. It is a good appetizer^{5,7}. *Sukta* causes intrinsic haemorrhage, digests foods and *ama* (indigestion), produces hoarseness of voice, alleviates *kaphaja pandu* (a type of anaemia with increase in *kapha*) and worms⁹.

Dhanyamla (dhanyasukta): *Dhanyamla* is a liquor prepared by fermenting the water in which rice and such other grains like *kodrava* (*Paspalum scrobiculatum* L.), pulses, etc. have been slightly cooked or merely washed. It is purgative, penetrating, hot in potency, aggravates *pitta*, cold to touch, relieves fatigue and exhaustion, increases appetite and hunger, cure pain of urinary bladder, ideal for use as *asthapana* (decoction of enema) for all patients, good to the heart, easily digestible, mitigates *vata* and *kapha*⁶. It is useful in anorexia and diseases caused by *vata*. It is *satmya* (whole some) for persons residing on the sea coast⁷. *Dhanyamla* is satiating and best suited in loss of taste⁵.

Sauvira and Sauviraka: *Sauvira* is prepared using de-husked barley either raw or cooked by adding 8 times of water and then fermented⁵. It cures duodenal diseases, diseases of *kapha* origin, purgative, kindles digestive fire, beneficial in upward movement of gas and bodyaches⁵. *Sauvira* cures *grahani* (irritable bowel syndrome) and *arsas* (piles). It is digestive and useful in *udavarta* (flatulence), *angamarda* (malaise), *asthi sula* (pain in bones) and *anaha* (flatulence)^{7,9}. *Sauviraka* or *suviramla* is prepared by fermenting wheat¹⁰.

Aranala: It is prepared of dehusked *godhuma* (*Triticum dicoccum* Schubl.) either raw or cooked and it shares all the properties of *sauvira*^{5,7}.

Tusodaka: It is prepared by the coarse powder of *yava* along with its husks. It is a digestive stimulant and a cardiac tonic. It cures *pandu* (anaemia) and *krmi* (parasitic infection). It is hot and carminative. It vitiates *pitta*, blood and cures pain in the urinary bladder^{5,7}.

Kanjika: The preparation made by fermenting rhizomes, roots, fruits, *kulmasa* (half baked wheat) and *dhanya manda* (fermented cereals) is called *kanjika*¹⁰. *kanjika* is also prepared by the fermentation of rice and millet⁹. It is purgative, hot, appetizer and carminative. When applied externally, it cures *daha* (burning syndrome) and fever. When taken internally, it alleviates *vayu* and *kapha*.

Scum of gruel of cereals and other grains, kept undisturbed for some days and allowed to ferment become sour. It is bitter in taste, penetrating, hot in potency, helps taste, digestive, easily digestible, mitigates fever with burning sensation by touch (anointing), mitigates *vata* and *kapha* by drinking. When prepared from *vataka* (fried balls of flour) of *masa* (black gram), it is more superior. It is easily digestible, relieves colic (severe pain in the abdomen), indigestion, constipation, accumulation of undigested materials and cleanses the urinary bladder. Persons suffering from fainting, giddiness, intoxication, itching, leprosy (and other skin diseases), bleeding diseases, anaemia, tuberculosis, emaciation, injury to lungs, exhaustion and mild fever are not suitable to drink *kanjika*, which shall lead to the aggravation of *dosas* in them^{5,7,10}. In the special preparation of *kanjika*, the portion prepared of *kanjika* mixed with *ardraka* (*Zingiber officinale* Rosc.) and salt is carminative and digestive stimulant. It alleviates *amavata* (rheumatism)⁷.

Kanjika because of being obtained from cereals is a vitalizer, removes burning sensation by external application while intake pacifies *vata*, *kapha* and thirst. It expels mucus and by gargle alleviates abnormal taste, foul smell, dirt and dryness of mouth and also exhaustion⁹.

Sandaki: The portion prepared by the fermentation of the leaves of *mulaka* (*Raphanus sativus* L.) is called *sandaki*. It is prepared using *rajika* (mustard), *mulaka dala* (leaves of radish), *jala* (water) and *salipistaka* (dough of rice flour). All are put together in a pot and allowed to ferment. It is purgative in

action. The *santaki* prepared of the *vataka* (fried balls of flour) of *mudga* [*Vigna mungo* (L.) Hepper] is superior in quality. It alleviates *vata*. It is light, appetizer and carminative par excellence. It cures *sula* (colic pain), *ajirna* (indigestion) and *vibandha* (constipation). It cleanses the urinary bladder⁷. *Sandaki* helps taste, hard for digestion and increases *pitta* and *kapha*⁵.

Cukra and *Asuta*: *Cukra* is a type of vinegar and prepared by 1 part jaggery, 2 parts honey, 4 parts *dhanyamla* (a sour preparation of cereals), 8 parts *mastu* (lower portion of butter milk) and 16 parts water. To this, a small quantity of the powder of *trikatu* (*Zingiber officinale* Roxb., *Piper nigrum* L. and *P. longum* L.) is added. *Mastu* is kept in clean jar along with jaggery, honey and *dhanyamla*. This jar is kept inside a heap of cereals or heap of paddy of the concerned season for 3 days. This is called *cukra*¹⁰. This is also fermented with sugarcane juice, *madhuka* flowers and *pilu* (*Coffea arabica* L.)⁹. *Asuta* is prepared using tubers/rhizome and fruits kept soaked in water and allowed to ferment. This helps taste, digestive, mitigates *vata* and especially light for digestion⁵.

Madhusukta, *Gaudani* (*gudasukta*), *rasasuktani*: *Madhusukta* is prepared from the fruit juice of *jambira* [*Citrus limon* (L.) Burm.f.] mixed with *pippali mula* (*Piper longum* L.). These are put in a vessel containing honey and then kept within the heap of paddy for 3 days⁹. *Gaudani* is made of jaggery, water, *vasa* (muscle fat) and oil. It is also known as *gudasukta*. Sour gruel fermented with jaggery water mixed with oil along with tubers, herbs and fruits is also known as *guda sukta*. *Rasasuktani* is made of sugarcane juice⁹.

Tonic wines: Tonic wines are medicinally useful, increase vitality and improve digestion. Tonic wines are made by steeping medicinal herbs in wine for several weeks⁴. A simple and effective way to make a tonic wine is in a jar or a ceramic vat with a tape at the base to enable the wine to be drawn off without disturbing the herbs. Wine can be added periodically to keep the herbs covered, although, in time, this will reduce the wine's tonic effectiveness. If exposed to the air, the herbs may go moldy due to the unwanted growth of fungi, making the remedy not only ineffective but also unsafe to consume⁴.

Fractions of beverages and their properties

The upper portion of *madya*, which is light in nature, is called *prasanna*. The portion below that,

which is relatively denser, is called *kadambari*. The portion below *kadambari* is called *jagala*. The portion, which is at the bottom region of the container, is called *medaka*. The lowest layer of *medaka* containing the paste of drugs is called *vakkasa*. The material that is used for initiating fermentation of alcoholic drinks is called *kinva* or *surabija* (it is the microbial inoculums). If *kinva* is not matured, then it is called *madhulaka*. It is present in not properly fermented *madya*^{7,10}.

Prasanna: This supernatant clear portion of alcoholic preparation alleviates vomiting, anorexia, pain in heart and abdomen, *kapha*, *vata*, piles, constipation and hardness of bowels⁹. *Prasanna* cures *anaha* (flatulence), *gulma* (gastritis), *arsas* (piles), *chardi* (vomiting) and *arocaka* (anorexia)⁷.

Kadambari: The lower thick portion of wine is called *kadambari*¹⁰. *Kadambari* type of alcoholic drinks is digestive stimulants. It cures *anaha* (flatulence), pain in the heart and pelvic region and colic pain. It is heavy, aphrodisiac, alleviator of *vata* and laxative⁷.

Jagala and *Bakkasahi*: *Jagala* alleviates *kapha*. It is constipative. It cures *sopha* (oedema), *arsas* (piles) and *grahani* (irritable bowel syndrome). It is hot, carminative and strength promoting. It cures *ksut* (morbid hunger), *trnsa* (morbid thirst) and *aruci* (anorexia)⁷. Beneficial for colic, dysentery, *borborygmi* (sound of flatus in intestine), and constipating⁸. *Jagala* is digestive, produces oedema and alleviates dysentery, gurgling sound in bowels, piles, *vata* and consumption. In oedema, it is applied externally. *Bakkasah* is a *jagala* free from liquid and consisting only of yeast and drugs. It is *vata* aggravating, appetizer, laxative, diuretic and non-slimy⁹.

Medaka: It is sweet, strength promoting, *stambhana* (which increases the power of retention), cooling and heavy⁷.

Vakkasa: This portion from which alcohol is taken out is constipative and it aggravates *vata*⁷.

Kinvaka: It alleviates *vata*. It is not good for heart and difficult to digest⁷.

Madhulaka: It is unctuous, constipative, aggravates *kapha* and difficult to digest^{7,10}.

Assessing the quality of beverages

The alcoholic drink in which 5 tastes are manifested, which is pure and endowed with good smell is of good quality. The alcoholic drink, which

causes burning sensation, putrid in smell, bad in taste, contains *krmis* (maggots, including microbes and worms) and thick in nature should be rejected⁷.

Fresh and stored wines and their properties

Freshly prepared alcoholic drinks (*nava madya*) are *abhisyandi* (which obstructs channels of circulation). It alleviates all three *dosas* and is a laxative. It is not good for heart and not tasteful (*virasa*). It causes burning sensation and produces putrid smell. It is *visada* (non-slimy), heavy and difficult to digest⁷. *Navam* which means immature in terms of taste and clarity; others take it as of not more than a year⁹. They should not be used by persons who are having purgation (or had purgative therapy) and who are hungry^{5,6}.

Purana madya, the same alcoholic drink, when preserved for a long time and used, is relishing. It cures *krmi* (parasitic infection) and aggravation of *kapha* as well as *vata*. It is a cardiac tonic, fragrant, endowed with good qualities and light. It cleanses the channels of circulation, improves appetite and opens body channels⁷. Old wine is an appetizer, much relishing, anthelmintic and pacifies *vata* and *kapha* and promotes digestion. It is consumed as of beyond of one year^{5,9}.

Conclusion

It is hereby evident that Ayurveda constitutes a profile of alcoholic beverages with therapeutic properties. It is indicated that such alcoholic drinks, taken according to the prescribed procedure, in proper dose, at the proper time, along with wholesome food and according to the capacity of the individual produces effects like ambrosia⁷. When used inappropriately, it causes diseases and works as a poison. The dose taken should not cause intoxicated movement of eyeball^{5,7,10}. It is further important to apply the modern science to understand the traditional systems of human life. The tradition of Ayurveda requires multifaceted approach of research for validation. To cite, the traditional beverages and their medicinal properties can be investigated by modern scientific approaches. Understanding of microbes involved in these biomedical fermentations, the chemistry of fermentations and associated biotransformation processes have to be studied in detail so as to validate the living great tradition of Ayurveda. Further, assessment of the quality of beverages in terms of ethyl alcohol content, dry

extract, volatile acid content, fixed acid content, sugar content and testing of methyl alcohol, etc. have to be performed in order to use them medicinally.

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