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The Timeless Lineage of Traditional Indian Salts: An Investigation to Study Their Applications in Accordance with Ayurveda

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Abstract:

Salt, the crystalline chemical element, holds a profound and complex significance for human civilization. In India, a nation of overwhelming geographical and cultural diversity, the story of salt extends far beyond the ubiquitous refined white grains that find their way onto most tables. This article explores the rich heritage of traditional and ancient salts of various Indian regions, their use through history, their cultural relevance, and their scientifically proven benefits. We discuss the unique properties of mineral salts like Himalayan pink salt (Sendha Namak), Indian black salt (Kala Namak), and artisanal sea salts. Furthermore, this paper extends the definition of traditional salt to include striking plant and herbal preparations, such as the herb-infused Pisyu Loon of Uttarakhand, the indigenous ash-based Tapyo salt of Arunachal Pradesh, and a potassium-based salt substitute of the banana plant (Musa balbisiana). These salts are not merely seasoning agents but are closely intertwined with culinary practices, Ayurvedic medicine, and local traditions. This paper argues that the conversation about sodium needs to include salt quality. Traditional salts offer a full profile of minerals missing from refined table salt. We investigated their chemistry, historical uses, and recent science to reveal the potential nutritional and therapeutic value of using these older salts. The article concludes by recommending interdisciplinary research to validate traditional claims and conservation of sustainable salt harvesting and preparation practices for the benefit of local economies and preservation of a valuable component of India's natural and cultural heritage.

Keywords: traditional salts, history of salts, Ayurveda, conservation.

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Introduction

Salt, or chemically sodium chloride, is a substance so important to life that its past has become inextricably linked with the past of mankind itself. Such physiological functions as maintenance of fluid balance, transmission of nerves, and muscle function are made possible by it (Batmanghelidj, 2008). Throughout history, its extraordinary value made it a form of money, an incentive for the creation of vast trade routes, and a cause for political conflict (Kurlansky, 2003). In India, salt is more than just a mere commodity; it is a potent symbol of culinary belief, cultural identity, and even political defiance, best exemplified by the Dandi March of Mahatma Gandhi in 1930 against the British salt tax, which turned into a turning point in the country's battle for self-determination.

The Indian subcontinent, with its wide and diverse geology, from the Himalayan mountain range to its 7,500-kilometer shoreline, has an astounding wealth of natural salts that have been mined and utilized for millennia. Prior to the widespread use of industrially processed and iodized table salt, households throughout India relied on those salts that were mined directly from the mountains, inland lakes, and the ocean (Das & Gude, 2016). These salts, including the renowned pink colored rock salt and the pungent black salt, were revered for their own distinct flavour, texture, and long list of purported health benefits. They hold a place of honour in ancient Ayurvedic writing, where they are meticulously classified on the basis of place of originand characteristics and used to treat a host of illnesses (Sharma, 2014). This cultural significance is also highlighted by the use of specific salts during religious ceremonies and fasting periods, which remains prevalent today (Sodhi, 2015).

Beyond the well-known mineral salts, this article seeks to give a thorough overview of India's most important traditional and ancient salts. We will investigate the inventive plant-based and herbal salt remedies that have arisen from local traditional knowledge systems in addition to the geological treasures. These include the distinctive Tapyo salt made from ash by the Apatani tribe in Arunachal Pradesh, the fragrant Pisyu Loon from the Himalayan state of Uttarakhand, and a novel salt alternative made from banana plants (Musa balbisiana). Their geographic origins, production processes, and fundamental roles in regional cuisines and traditional medicine will all be examined in this essay. It will also compile the scientific data that is currently accessible and analyze their mineral makeup and possible health advantages. It offers a viewpoint on how these natural spices might support a more balanced and wholesome modern living by exploring the biodiversity and wisdom ingrained in Indian traditions.

Mineral Salts from Earth's Ancient Deposits:

Deep in the crust of the earth and mountainous ranges lie crystalline form deposits of salt and traces of ancient seas that evaporated many years ago. These salts are respected for their pure and rich composition, which has been protected from modern-day environmental pollutants. In India, Himalayan pink salt and Indian black salt are considered to hold a legendary status.

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Himalayan Pink Salt (Sendha Namak):

The Crystalline Treasure of the Mountains Sendha Namak or Himalayan pink salt is known across India and is the most globally recognized of the subcontinent's traditional salts. its vivid pink and orange hues with its crystalline structure have their place as the prized ingredient among chefs and all over the community worldwide. It has to be mined and cherished for hundreds of years to have its origin as the purest form of salt.

According to geology, Sendha Namak is a kind of rock salt, or halite. It is meticulously extracted from the Salt Range mountains, a collection of hills in Punjab, Pakistan, that represent the glorious Himalayan range's southern foothills. These enormous salt deposits are a geological remnant of a big, ancient sea that disappeared around 250 million years ago. The sea bottom was raised and trapped as the Indian and Eurasian tectonic plates migrated and collided, and the tremendous pressure over eons created the thick, crystalline salt deposits that are visible today (Aslam & Ahmad, 2018). Because of its ancient provenance, the salt is incredibly pure and devoid of contemporary contaminants.

Because of its rich and diverse mineral content, Sendha Namak's distinctive pink tint is completely natural. It is renowned for having up to 84 distinct trace minerals and elements, while being mostly made up of sodium chloride (Aslam & Ahmad, 2018). Along with vital minerals like calcium, magnesium, potassium, and strontium, iron oxide is the most important of these and the primary cause of its pinkish color (Kadam & Yadav, 2012). Regular table salt, which is industrially processed to the point where these advantageous components are totally eliminated, stands in sharp contrast to this complex mineral profile. Sendha Namak is considered sacred in India. Since it is regarded as the purest salt on the market, it is an essential component of religious rites and times when people fast, like during the nine day Navratri festival. Since Sendha Namak is regarded as "phalahari," or an earthly substance appropriate for a pure, spiritual diet, it is used primarily to season foods prepared for fasting, or "vrat ka khana" (Sodhi, 2015). Sendha Namak is highly regarded by Ayurveda, the traditional Indian medical system, which refers to it as "saindhava lavana." Ayurvedic

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practitioners regularly recommend it to improve digestion, relieve flatulence, and stimulate appetite. It is also a key ingredient in therapeutic preparations like saline solutions for nasal cleansing (jala neti) and gargles for soothing sore throats, owing to its purported antimicrobial properties (Nadkarni, 1976).

Modern science is gradually validating certain traditional truths about Himalayan pink salt. Its most notable advantage is its diverse mineral composition. Although these trace minerals are present in trace levels, their nutritional profile is more balanced than that of refined salt, which lacks them (Aslam & Ahmad, 2018). For example, magnesium serves as a cofactor in hundreds of enzyme activities required for muscle and nerve function, whereas potassium is required for blood pressure and fluid balance. Since it isn't refined, it does not include anticaking elements like sodium ferrocyanide and calcium silicate, which are frequently added to table salt. According to proponents, consuming this natural salt aids in retaining an adequate electrolyte balance, which is essential for preventing cramping in the muscles and remaining hydrated (Batmanghelidj, 2008). It is used less frequently due to its faint flavor, which lowers the total amount of salt ingested.

Indian Black Salt (Kala Namak): The Pungent Volcanic Rock Salt:

Indian black salt, or Kala Namak, is a unique volcanic rock salt that serves as a cornerstone of South Asian cuisine. It is renowned for a distinctive, pungent, and savory flavor that is utterly unlike any other salt, making it an irreplaceable ingredient in countless traditional Indian dishes, snacks, and drinks.

Kala Namak originates from salt mines in the Himalayan regions of India, Pakistan, Nepal, and Bangladesh. The raw salt, which is initially pinkish grey rather than black, is known as Himalayan black salt or ‘sanchal’. The salt's unique properties come from an ancient Ayurvedic art. Raw salt crystals are sealed inside a clay jar with charcoal and a blend of herbs like harad (Terminalia chebula), amla (Phyllanthus emblica), and bahera (Terminalia bellirica), which together form the detoxifying Triphala mixture (Majeed & Prakash, 2007). The sealed jar is then fired in a kiln for a full day.

This intense heat triggers a chemical reaction between the salt and the sulfur within the herbs (Ahuja & Kumar, 2019). This crucial step produces iron sulfide and other compounds responsible for the salt's signature dark purplish color, smoky aroma, and savory umami flavor, often compared to boiled eggs (Mishra & Sharma, 2017).

Instead of being used in cooking, Kala Namak is most frequently utilized in Indian cuisine as a garnish salt or as a main ingredient in spice mixes. It is the key component in "chaat masala," the spice blend that lends the distinctively tangy and savory flavor of famous Indian street snacks (chaats), such as pani puri and bhel puri (Prakash, 2011). It is generously sprinkled on savory appetizers, yogurt dishes like raita, and fruit salads. Its unique flavor is particularly crucial for adding a rich and refreshing depth to many classic cooling summer beverages, including jaljeera. Kala Namak is especially valued by vegans and plant-based diet followers because of its exceptional ability to replicate the flavor of eggs in recipes like tofu scrambles.

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From an Ayurvedic perspective, Kala Namak is highly regarded for its therapeutic effects. As a cooling spice, it helps soothe the Pitta dosha. Its primary role is as a potent digestive aid, known for easing gas and bloating (Chauhan & Singh, 2015). Ayurvedic wisdom suggests it can relieve constipation and indigestion by acting as a gentle laxative and encouraging the liver to produce more bile, which is essential for absorbing fats (Godbole & Thatte, 2012). Because of these properties, it is a common ingredient in many classical Ayurvedic digestive powders.

Scientific analysis of Kala Namak confirms its unique chemical makeup, with its distinctive taste and smell attributed to various sulfur compounds (Mishra & Sharma, 2017). One of the most significant potential health benefits of Kala Namak is its lower sodium content compared to regular table salt. Its incredibly potent and savory flavor allows for a much smaller quantity to be used to achieve the desired taste, which can be an effective strategy for individuals aiming to reduce their overall sodium consumption for managing hypertension (Henney et al., 2010).

Salts from the Sea: Harvesting the Coastal Bounty

Along India's vast 7,500-kilometer coastline, which touches the Arabian Sea, Indian Ocean, and Bay of Bengal, salt harvesting is an ancient craft. For thousands of years, coastal people have mastered extracting this essential mineral directly from the sea. The resulting traditional sea salts are a product rich in nutrients and cultural significance. This entire practice demonstrates a lasting, sustainable relationship between these communities and their natural environment.

India has a thriving heritage of producing sea salt, with several places producing salts with distinctive qualities. One of the world's major salt-producing regions is the state of Gujarat,

particularly the Rann of Kutch. Here, enormous salt pans that are tended by "agariyas," or salt farmers, gleam in the unrelenting sunlight. Similar to this, artisanal salt manufacturing has a long history along the Tamil Nadu coast at Tuticorin and in some areas of Odisha. Solar evaporation, a natural and energy-efficient process, is the main technique. A system of big,

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shallow ponds or pans is formed by carefully channeling seawater. Over the course of several weeks or months, the water is gradually evaporated by the strong tropical sun. Salt crystals start to form and precipitate from the concentrated brine that is left behind as the water volume drops. After that, the salt is manually extracted and meticulously scraped. The salt crystals will maintain their natural integrity and, most importantly, their whole mineral spectrum thanks to this slow, delicate process (Ghosh, 2014). The industrial manufacturing of table salt, which includes chemical washing, bleaching, and high heat treatment that removes almost all naturally existing minerals, contrasts sharply with this procedure. Unrefined sea salt has long been the mainstay of the kitchen in coastal areas. It is used in various aspects of daily cooking, including pickling, preserving seafood, and flavoring vegetables and curries. In India, pickling is a crucial food preservation method that greatlydepends on the quality of the salt used to prevent spoiling and provide nuanced tastes (Prakash, 2011). Because of its clear, briny flavor, sea salt is preferred by many traditional cooks who feel that it improves cuisine more than refined table salt's harsh saltiness (Drake & Drake, 2011). Beyond the kitchen, sea salt is vital to local health practices. Using the inherent antibacterial qualities of salt, a warm saltwater gargle is a universal treatment for a sore throat (Ode, 2016).

What is retained is the main advantage of unprocessed sea salt. Minerals are abundant in seawater, and salt that is extracted via sun evaporation incorporates these components into the finished product. Natural sea salt includes a variety of vital trace elements, such as magnesium, calcium, potassium, zinc, and iron, while being mostly sodium chloride. Iodine is arguably the most significant of them. Thyroid function depends on iodine, which is necessary to produce hormones that control metabolism (Zimmermann, 2008). Unrefined sea salt is a natural source of iodine, providing an accessible form of this essential vitamin, whereas most of the table salt is chemically iodized to prevent deficiency diseases.

Unique Herbal and Plant Based Salts: Innovations of Traditional Wisdom:

In addition to mineral and sea salts, India's diverse ethnobotanical environment has led to the development of inventive salt concoctions that employ plants as their primary source or combine spices with regional herbs. Indigenous tribes' inventiveness and profound knowledge of the local flora are demonstrated by these crafts. They belong to a class of functional foods whose taste and medicinal qualities are closely intertwined.

Pisyu Loon: The Herbal Infused Salt of Uttarakhand

Pisyu Loon, also called Pahadi Namak, is a distinctive and fragrant seasoned salt that is a mainstay in every home in the Himalayan state of Uttarakhand, which is tucked away in the Kumaon and Garhwal areas. Its ancient production process is hinted at by the word itself, which means "ground salt." It is more than simply salt; it is a condiment that captures the crisp scents of the mountains and offers a whole range of flavors. Pisyu Loon is usually prepared by hand using a "sil batta," a flat stone mortar and pestle, and is a labor of love. Usually, a colorful blend of fresh mountain herbs and spices is mixed down with rock salt, also known as Sendha Namak. Fresh mint leaves (pudina), coriander leaves (dhania), ginger, garlic, and green or red chilies

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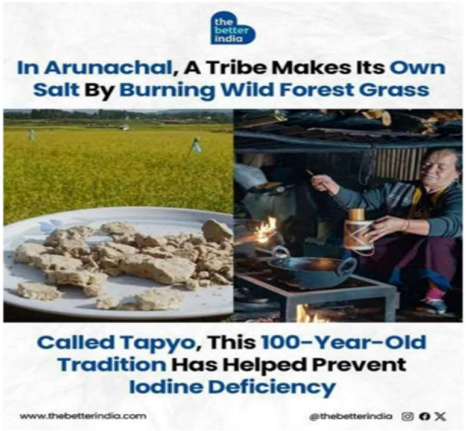
are typical ingredients; however the precise recipe differs from family to family (Singh & Kumar, 2017). The herbs and spices are crushed during the long grinding process, releasing their essential oils, which subsequently permeate the salt crystals profoundly. The end product is a salt that is wet, overflowing with taste and scent, and has a vivid color, usually green or yellow.

This herbal infused salt offers a very diverse range of culinary options. It elevates even the most basic cuisine. A basic dish of lentils and rice, sliced cucumbers, or a bowl of fruit salad may all be made into a tasty supper with a sprinkling. It is frequently given with meals as a general condiment and goes well with cooked potatoes or corn on the cob. Because it offers a well-balanced combination of salty, spicy, and herbaceous qualities in a single pinch, its usage eliminates the need for several additional spices. Pisyu Loon is more than simply a spice when it comes to traditional health. The herbs that are added to it are picked for their digestive qualities in addition to their flavor. According to Ayurveda, ginger, coriander, and mint are widely recognized for promoting appetite, easing flatulence, and assisting with digestion (Aggarwal, 2007). Garlic contributes its well known cardiovascular and antibacterial properties. As a result, Pisyu Loon is an easy, daily way to include these healthful herbs in your diet.

Tapyo Salt: An Indigenous Herbal Salt of Arunachal Pradesh

The Apatani tribe, a group renowned for its distinctive sustainable farming methods, makes a unique salt replacement known as Tapyo in the isolated Ziro Valley of Arunachal Pradesh in Northeast India. The Apatani people created a clever way to harvest salt from native plants in an area where typical salt mines do not exist, and trading routes have always been challenging. In actuality, Tapyo is a potassium chloride-based salt replacement that is created from ash rather than minerals.



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Tapyo is a traditional salt substitute created by the Apatani people, showcasing their deep ecological knowledge. They make it by burning specific wild plants, like *Sarcandra glabra*, which are known to accumulate potassium from the soil (Patil & Patil, 2018). The ash from these plants is then mixed with water, filtered, and carefully boiled down until only greyish, potassium-rich salt crystals remain. For centuries, this salt has been a cornerstone of Apatani cuisine and cultural identity. Because it's high in potassium and low in sodium, it's also a naturally healthier choice for helping to manage blood pressure (Henney et al., 2010).

Banana Plant Salt: An Ayurvedic Salt Substitute from Musa balbisiana:

Following Ayurvedic principles, a unique salt substitute has been made from the pseudostem of the **Musa balbisiana Colla**, a wild banana species found throughout India (Neog & Deka, 2013). This process draws upon the Ayurvedic concept of 'kshara', which refers to alkaline preparations made from the ashes of medicinal plants.

The production process mirrors the method used for Tapyo salt but uses a different plant source. The pseudostem (the trunk-like part) of the banana plant is cut, dried, and incinerated to produce ash. This ash is known to be particularly rich in potassium salts. The ash is then dissolved in water, filtered to remove impurities, and the resulting liquid is evaporated to crystallize the salt (Goyal & Goyal, 2010). The final product is predominantly potassium chloride, with traces of other minerals from the plant.

This banana plant salt substitute's main advantage is that it may be used by people who must tightly restrict their sodium consumption, such as those who have renal illness or hypertension. Although there are commercial salt replacements based on potassium chloride, their unpleasant, artificial flavor frequently draws criticism. A more acceptable option may be provided by a naturally occurring substitution extracted from a source such as the banana plant. From an Ayurvedic perspective, banana plant kshara is also used therapeutically for its diuretic and alkalizing properties, believed to be beneficial for urinary tract health and balancing body pH (Nadkarni, 1976). This innovation highlights a pathway where traditional knowledge can be scientifically validated and scaled to provide natural, healthier alternatives to conventional food products.

Comparative Analysis and Modern Perspectives

The increasing global focus on wellness and natural foods has brought traditional salts into the mainstream. A comparative analysis with common refined table salt reveals vast differences in composition, flavor, and potential health impact, prompting a necessary re-evaluation of salt's role in a healthy diet.

Traditional Salts versus Refined Table Salt:

The journey from source to table is fundamentally different for traditional and refined salts. Refined table salt undergoes intensive processing, including chemical washing, bleaching, and high heat treatment, which strips away all minerals, rendering it approximately 99% pure sodium chloride (Kadam & Yadav, 2012). To prevent clumping, industrial additives like sodium aluminosilicate or yellow prussiate of soda are introduced. In

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contrast, traditional mineral salts like Sendha Namak and unrefined sea salt are holistic, retaining a wide array of trace minerals from their natural environment (Aslam & Ahmad, 2018). The herbal and plant-based salts represent another category altogether. Pisyu Loon is a value added product where salt is a carrier for beneficial herbs. Tapyo and banana plant salt are not sodium chloride at all, but are primarily potassium chloride, making them true salt substitutes. The flavor profiles are also worlds apart. The minerals in traditional salts provide a more complex, nuanced taste compared to the harsh, one dimensional saltiness of refined salt, while the herbal and plant-based salts offer unique savory, pungent, or herbaceous notes.

Sodium, Potassium, and Health:

As a significant risk factor for hypertension and cardiovascular disease, excessive salt consumption has been the focus of public health campaigns, which is understandable (Henney et al., 2010). It is important to remember that mineral salts, such as sea salt and Sendha Namak, nevertheless contain a lot of sodium chloride and should only be used sparingly. However, the advantage of their mineral content and the preference for quality over quantity are the main arguments in favor of their use. By substituting potassium for sodium, plant-based salts such as Tapyo provide a straightforward option for sodium reduction. The ratio of sodium to potassium in the modern diet is frequently dangerously excessive. One important tactic for enhancing cardiovascular health is to consume more potassium while consuming less salt. There are several nutritional lessons to be learned from the historic usage of these potassium- rich salt replacements in some Indian cultures.

Challenges and Future Directions

As traditional salts become more popular, they face significant hurdles. Misleading labels and fake products are rampant, making stronger quality certification essential. There's also a real danger that the skills for making unique herbal and plant-based salts will disappear as traditions fade. On top of that, climate change puts coastal salt harvesting directly at risk. Addressing these problems requires a combined approach. We need more multidisciplinary research and clinical studies to scientifically validate the health benefits of these salts. To ensure this priceless cultural and culinary tradition survives, it is vital to support the artisans and communities behind it with economic incentives and better market connections.

Conclusion

India's traditional salts represent a rich mosaic of culture, geology, and profound ecological wisdom. More than mere seasonings, they are a tangible link to the subcontinent's diverse history and landscapes. This investigation has journeyed from the sun dried sea salts harvested along the vast coastline, to the mineral rich crystals of Sendha Namak mined from ancient mountains, and the alchemically fired, aromatic Kala Namak. It has also explored the remarkable ingenuity of indigenous communities through Uttarakhand’s herbal Pisyu Loon, Arunachal Pradesh’s ash-derived Tapyo, and the medicinal banana plant salt, revealing a spectrum from simple minerals to intricate, plant based preparations.

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This deeper look highlights the stark contrast between these natural, artisanal salts and modern, industrially refined table salt. While the latter is often a stripped down chemical compound with additives, traditional salts offer a holistic synergy of sodium chloride with essential trace minerals or, in some cases, a beneficial substitution with potassium chloride. Their respected place in Indian culinary traditions and Ayurvedic medicine is not based on folklore, but on real, measurable advantages for flavour, digestion, and mineral balance. This ancient knowledge is increasingly being validated by modern science, which affirms the nutritional value of consuming whole, functional salts. Therefore, the global conversation around salt and health must evolve beyond a simple reductionist message. While controlling sodium intake is a vital public health goal, it is crucial to also consider the quality, source, and composition of the salt we eat. Choosing a traditional Indian salt is a conscious act a choice to nourish the body with necessary minerals, avoid unwanted chemicals, experience a more complex flavour, and help preserve cultural and biological diversity. To carry these ancient treasures forward, we must commit to interdisciplinary research, protect genuine products from counterfeiting, and support the sustainable practices of the communities that have stewarded these earthly gifts for centuries. By doing this, we can integrate the profound wisdom of the past into a more healthful, flavourful, and sustainable future.

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