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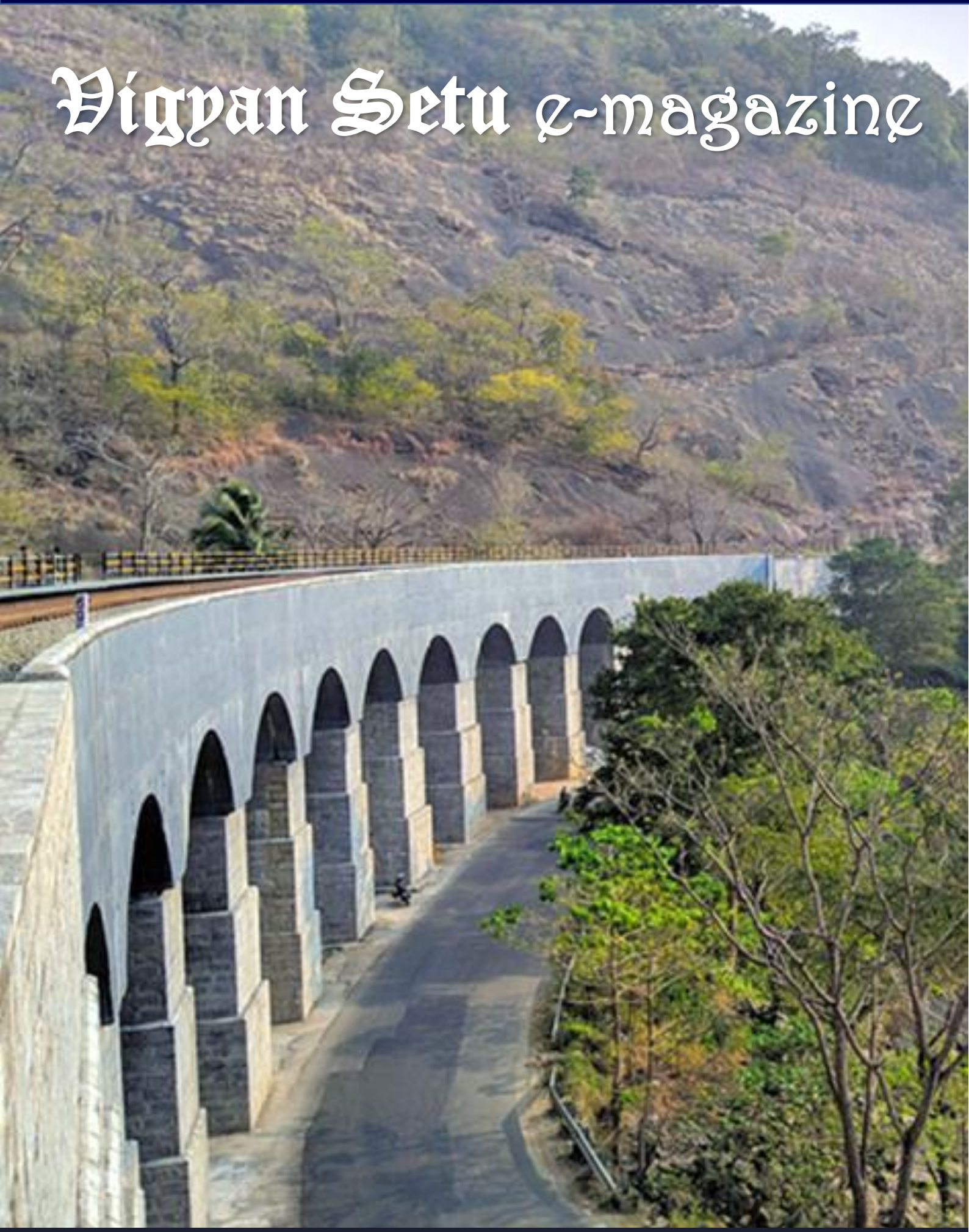
Vigyan Setu e-magazine



13th Foundation Day Celebrations

Vigyan Setu e-magazine

A quarterly, bilingual e-magazine of Vigyan Setu Foundation®

Contents

Vigyan Setu, a quarterly, bilingual e-magazine is published by Vigyan Setu Foundation that bridges the gap between science and society. Curated with creativity, curiosity, and critical thinking, Vigyan Setu e-magazine features insightful articles, creative expressions, and real-world applications of science, technology, and innovation. It aims to nurture scientific temper, celebrate young minds, and spotlight emerging researchers whose work is shaping a sustainable future.

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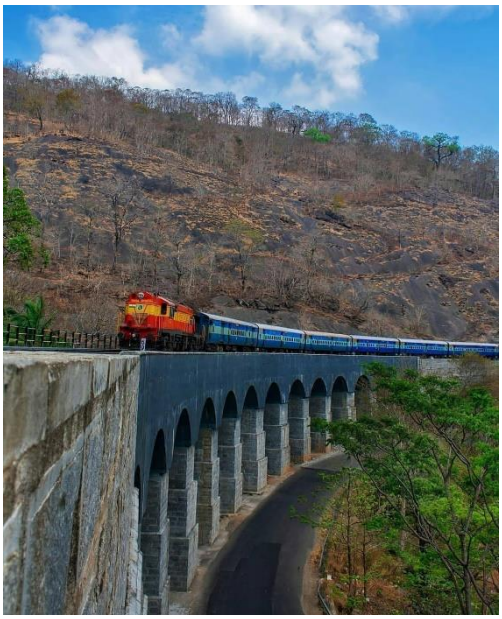
About the Cover

13 ARCH BRIDGE – KERALA, INDIA



The Pathimoonu Kannara Bridge, also known as the 13 Arch Bridge, is a fascinating colonial-era structure located in Kerala, India. Built by the British in 1904, this bridge is part of one of India's oldest mountain rail lines, originally constructed to transport goods from Kollam to Madras.

The bridge features 13 arches and was built using a traditional method called Surki, which involves rocks, limestone, and jaggery. It stands on 100-foot-tall granite pillars, connecting two hillocks and offering breathtaking views of the Western Ghats.

The bridge is surrounded by lush greenery and is flanked by the river Kazhuthurutti on one side and the Kollam-Thirumangalam National Highway on the other. It has become a popular spot for nature lovers and has been featured in several Indian films. The bridge is also notable for its proximity to the Aryankavu tunnel, one of the longest railway tunnels in Kerala.

Visitors can climb a flight of steps to the top of the bridge during the dry season, providing a spectacular vista of the surrounding landscape. This historic bridge is a testament to the engineering prowess of the British era and remains a significant landmark in Kerala.

We have specially chosen the 13 Arch Bridge as the cover photo for this magazine issue to mark the celebration of Vigyan Setu Foundation's 13th Foundation Day.

***Photo credit*: Google images, www.beontheroad.com**

From the Editor's Desk

Dr. Neha Sharma

I draw inspiration from the wonderful creations around me! Sat here, at the world's most visited museum, I am reminded of the powerful role of preserving and sharing the human culture and the wealth of knowledge created for our generations to visit, explore, and experience!

I feel equally motivated by the mission of our organisation, Vigyan Setu Foundation® (VSF), to connect science with society and inspire informed, engaged communities. On this note, I present to you the 4th issue of this year's VIGYAN SETU – the quarterly, bilingual e-magazine comprising articles, write-ups, and news around the globe, anecdotes, stories, poems, puzzles and much more to sensitize, amuse and make you aware of how Science is a Way of Life.

This issue is packed with unique titles spanning across the four key function areas of our organization. As it is always a good idea to start reading with some snack and a sip, you shall find that through the initial topics, our specialist authors draw your attention to literally that! Touching upon the other senses, our experts simplify thought-provoking scientific concepts such as biological rain and science lab setup.

We are dedicated to raising awareness about typical lifestyle and critical health issues affecting women of which mental health and PCOS are exclusives. You shall also find a Q&A to work as a little exercise.

This is then followed by a wonderful contribution in Hindi providing us with deep insight into some ancient Indian knowledge systems. Some of our brilliant student contributors have shared their impression on the richness of our scientific heritage as well as science tourism, a topic we are passionate about at VSF.

Finally, under the realm of public health, we have intriguing contributions on common household hazards that usually go unnoticed and the significance of a daily DOSE of happiness that is just what we may be missing out on. On the animal health front, this issue enlightens on the equally important roles of pets and wildlife. Delving deeper into domesticated animals, our subject expert makes us aware of the first aid for our furry companions. We carry on exploring the NGO - Animal Protection Society, Udaipur. As you may be aware, VSF has recently initiated the Rabies Ambassador Programme (RA25). Its preliminary launch report elaborates the initiative and outreach.

We are very grateful to our contributors for sharing their expertise and the support of the editorial team. We recommend you subscribe to our website to keep receiving unlimited access to all our content from 2025. We seek your support to continue our work. If you value from our efforts, we would appreciate your donations as a token of commitment towards our mission.

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Beyond Curry: The Science of Indian Spices and their Health Benefits

Dr. Punit Kumar and Dr. Sanjeev Kumar Varshney

Indian cuisine is renowned globally for its vibrant flavours, aromatic spices, and wide variety of dishes. At its core lies a complex tapestry of spices that not only tantalize the palate but also offer numerous health benefits. While curry may be the most iconic dish, Indian cuisine is much more expansive, featuring a diverse range of flavours derived from unique spice blends cherished for centuries.

The use of spices in Indian cooking dates back millennia, with each region boasting its own distinctive flavour profile and culinary techniques. These herbs and spices have served as remedies for various ailments, with references to their medicinal properties found in ancient texts like the Vedas. Spices have held special significance throughout history, being used for rituals, preservation, perfumes, and even as aphrodisiacs.

The term 'spice' originates from the Latin word species, indicating items of high value and distinction. Throughout history, spices have often been considered more valuable than gold or gems, shaping significant historical events through trade. One of the primary advantages of using spices and herbs as remedies is their minimal side effects compared to commercial drugs. Indian spices, renowned worldwide, are particularly cherished for their ability to enhance flavour and provide nutrients to dishes without adding extra fat or calories.

Indian cuisine entices not only with its distinct flavours and aromas resulting from skilful spice combinations, but also offers a plethora of health benefits. Within Indian culinary traditions, one can find remedies for various ailments, from common colds and flu to toothaches and stomach aches. From the fiery heat of Kashmiri chilli to the earthy warmth of cumin, spices play a crucial role in defining the essence of Indian cuisine while also offering notable health promoting properties.

In recent years, scientific research has illuminated the numerous health benefits associated with Indian spices. Traditional culinary practices, such as tempering spices in hot oil to release their flavours, have been found to enhance the bioavailability of certain nutrients, further amplifying their health benefits. This holistic approach to food preparation underscores the intrinsic connection between flavour and health in Indian cuisine.

Spices originate from various plant parts, including seeds, fruits, roots, bark, and leaves, and are rich in bioactive compounds such as phenolic compounds, flavonoids, alkaloids, terpenoids, and essential oils, which contribute to their distinct flavours and health benefits. Each spice's unique aroma and taste are a result of its specific chemical composition.

Indian spices can be classified based on the plant parts they come from, their origin, flavour profile, and economic importance. Plant based categorizations include leaf spices (e.g., mint, curry leaf, bay leaf), root and bulb spices (e.g., onion, garlic, ginger), fruit spices (e.g., chilli, cardamom), rhizome spices (e.g., turmeric, ginger), bark spices (e.g., cinnamon), seed spices (e.g., cumin, coriander), pod spices (e.g., vanilla, tamarind), kernel spices (e.g., nutmeg), bud spices (e.g., clove), floral spices (e.g., saffron), latex spices (e.g., asafoetida), berry spices (e.g., black pepper), and aril spices (e.g., mace).

In terms of origin and flavour, spices can be classified into aromatic spices (e.g., cardamom, cumin), pungent spices (e.g., ginger, black pepper), phenolic spices (e.g., clove), and coloured spices (e.g., turmeric, saffron).

Economically, Indian spices are divided into major and minor categories. Major spices, such as small cardamom, black pepper, chilli, turmeric, and ginger, constitute a significant portion of the global spice trade, contributing 75–90% of total imports. All other spices are considered minor, further categorized into bulbous spices (e.g., garlic, onion), seed spices (e.g., coriander, cumin), aromatic spices (e.g., clove, cinnamon), leafy spices (e.g., curry leaf, mint), and acidulant tree spices (e.g., tamarind).

Turmeric (Haldi)

Turmeric, commonly known as Haldi, dominates the spice cultivation landscape in India, covering around 60% of the total area allocated for spices and condiments. Belonging to the Zingiberaceae family, turmeric comprises approximately 70 species, with 30 of them thriving in India. The primary source of turmeric is the rhizome of the Curcuma longa plant, which contributes to 96% of the country's total turmeric yield, while Curcuma aromatica accounts for the remaining 4% of cultivated land.

Turmeric rhizomes contain about 5% essential oil, with its distinctive yellow colour attributed to the presence of curcumin, a compound renowned for its anti-inflammatory, antineoplastic, and anti-angiogenic properties. The curcuminoids in turmeric act as antioxidants, aiding in purifying the blood and exhibiting antibiotic

properties. Traditional medicine has long utilized turmeric to address a wide array of conditions, including rheumatism, skin diseases, digestive issues, inflammatory disorders like arthritis, and hepatic diseases. It also helps in combating Alzheimer, reduce the risk of heart disease and restricts cell growth in cancer.

Chillies (Mirch)

Chillies, or Mirch, are another staple in Indian cuisine, belonging to the genus Capsicum and renowned globally for their versatility. They come in various sizes, shapes, and colours, with the red hue attributed to the presence of capsanthin, a carotenoid pigment. The pungency of chillies arises from the alkaloid capsaicin, measured in terms of Scoville value. Capsicum oleoresin derived from red chillies finds application in ointments to alleviate pain, swelling, and inflammation.

Green chillies are rich in Vitamin C and Vitamin A, functioning as carminative and antiflatulence agents, stimulating blood circulation and providing relief for sore throats. Red chillies are also utilized in alternative medicine to address diabetes and low back pain, with applications including capsicum plasters containing powdered capsicum for conditions like acute tonsillitis.

Cardamon (Elaichi)

Cardamom, scientifically known as Elettaria cardamomum and hailed as the 'Queen of spices', belongs to the Zingiberaceae family. It contains 2–10% volatile oil with a distinct pleasant odour, comprised of active compounds such as cineole, terpinyl acetate, pinene, sabinene, and porneol. Known for its carminative properties, cardamom aids in flatulent indigestion, stimulates appetite in those with anorexia, and facilitates digestion while preventing nausea and vomiting. In Ayurveda, it is recognized for its diuretic action, cough relief, cold remedy, and cardiac stimulation. Traditionally, it has been used to treat kidney and urinary disorders, gastrointestinal issues, and as a remedy for dental and gum infections, throat ailments, lung congestion, pulmonary tuberculosis, asthma, heart diseases, eye inflammation, and digestive disorders. Cardamom oil possesses anti-inflammatory and antibacterial properties and is employed in preparations for cold relief and sore throat gargles. Additionally, it is reputed as an antidote for snake and scorpion venom and is utilized in cases of food poisoning, with cardamom seeds noted for their aphrodisiac properties.

Garlic (Lehsun)

Garlic (Allium sativum L.) from the Liliaceae family is prized for its ability to enhance taste, nutritional value, and

digestion. Its principal compound, allin, is transformed into allicin, a potent antifungal and antiviral agent by the enzyme alliinase. Allicin further converts into allyl disulphide, which imparts the characteristic flavour. Garlic exhibits anthelmintic, anti-inflammatory, antioxidant, and antifungal properties with minimal side effects. It demonstrates antibacterial activity against both gram-positive and gram-negative bacteria. Garlic extract can reduce serum cholesterol levels and prevent heart disease. In traditional medicine systems such as Ayurveda, Siddha, and Unani, garlic is utilized for various purposes, including alleviating sinus problems, promoting abortion, regulating menstruation, treating paralysis, forgetfulness, tremors, colic pains, internal ulcers, and fevers. It also helps in lowering the blood pressure of those having complaints of high blood pressure.

Ginger (Adrak)

Ginger, derived from the root of Zingiber officinale Roscoe, contains bioactive compounds such as gingerol and shogaol, imparting a pungent, lemony, or camphory note. It serves as an appetizer, laxative, and remedy for indigestion, asthma, bronchitis, piles, rheumatism, headaches, and diabetic symptoms. Fresh ginger juice is beneficial for diabetics, while ginger tea and concoctions effectively relieve colds and coughs. Ginger improves blood supply to the heart muscles and acts as an astringent, shrinking mucous membranes or tissues to check discharge of blood serum or mucous secretions. It also possesses strong anti-inflammatory and anti-pyretic properties.

Coriander (Dhaniya)

Coriander, scientifically known as Coriandrum sativum L., hails from the Umbelliferae family and is native to the Mediterranean region. Revered for its fresh, spring-like aroma, coriander seeds contain 0.5 to 1.0% essential oil with the active compound geraniol. Rich in vitamin C and vitamin A, coriander leaves offer various health benefits, including aiding digestion, respiratory health, and urinary tract function. The seeds are chewed to combat bad breath and are infused to relieve flatulence, indigestion, vomiting, and intestinal disorders, including those affecting the female reproductive system. Oleoresin derived from coriander finds application in flavouring beverages, pickles, sweets, and other delicacies. It is also used to alleviate symptoms of urethritis, cystitis, urinary tract infections, skin conditions, throat ailments, vomiting, nosebleeds, coughs, allergies, and dysentery. Coriander oil exhibits antimicrobial properties and serves as a natural fragrance in the perfumery industry.

Clove (Laung)

Clove, commonly referred to as Laung, is the small reddish flower bud of the Syzygium aromaticum tree from the Myrtaceae family. The essential oil of cloves primarily contains eugenol, comprising about 15% of its composition. Clove oil is frequently employed in Ayurveda and Chinese medicine for its analgesic properties in dental care. Eugenol possesses antioxidant properties that prevent food from becoming rancid, while eugenol esters serve as flavouring agents. Clove offers various pharmacological actions, including analgesic, anaesthetic, antibacterial, antiparasitic, antioxidant, antiperspirant, antiseptic, carminative, digestive, rubefacient, stimulant, and stomachic effects. It is commonly used to alleviate minor disorders like indigestion, flatulence, and toothaches.

Black Pepper (Kaali Mirch)

Black pepper, known as Kaali Mirch, is the fruit of the black pepper plant from the Piperaceae family, utilized both as a spice and medicine. Its pungency and aroma stem from its oleoresin, present in the pericarp cells. Piperine, constituting 4–10% of black pepper, imparts its characteristic biting taste, while other alkaloids like chavicine, piperidine, and piperethine are present in smaller amounts. Black pepper is a rich source of nutrients such as manganese, iron, calcium, potassium, vitamins A, C, K, zinc, chromium, and others. It offers numerous medicinal benefits, including antihypertensive, anti-Alzheimer's, antidepressant, anti-inflammatory, antioxidant, antipyretic, antitumor, antiasthmatic, analgesic, and antimicrobial properties. Black pepper stimulates the secretion of hydrochloric acid, aiding digestion, and is used with hot milk to alleviate throat infections. It is also effective in treating rheumatism, muscular pain, intestinal gas, and headaches, with piperine enhancing the bioavailability of other medicines and serving as an antidote for cough and chest congestion.

Cinnamon (Dalchini)

Cinnamon, also known as Dalchini, is derived from the bark of the Cinnamomum verum tree belonging to the Lauraceae family and is widely used in households. Its bark contains 1% essential oil, with active compounds including eugenol, cineole, and cinnamaldehyde. Cinnamon exhibits antioxidant, anti-inflammatory, antidiabetic, antimicrobial, immunity-boosting, cancer-preventing, and heart disease-protecting properties. When combined with ginger, cinnamon stimulates blood circulation and digestion. It serves as an antipyretic, antiseptic, astringent, anti-inflammatory, carminative, diaphoretic, fungicidal, stimulant, and stomachic agent. Applied as a powdered spice in water, cinnamon bark can alleviate headaches and neuralgia, and is

traditionally used as a folk remedy for various internal disorders and tumours.

Carom Seed (Ajwain)

Ajwain, belonging to the Umbelliferae family, originates from India. Both its leaves and seeds are edible, with seeds resembling those of other Umbelliferae family members like caraway, cumin, and fennel. Ajwain seeds offer a taste and flavour akin to aniseed and oregano, owing to the presence of the bioactive compound thymol, which imparts a biting hot and bitter taste, numbing the tongue when chewed. In Ayurveda, ajwain is recommended for various stomach disorders such as indigestion, flatulence, diarrhoea, and colic.

Fenugreek (Methi)

Fenugreek, commonly known as Methi, goes by various names across different regions. It comprises hard lentil seeds with a dark fawn colour and a distinctive astringent aroma. Fenugreek seeds contain both soluble and insoluble fibre, along with a 5% bitter fixed oil. Offering numerous medicinal properties, fenugreek is utilized for digestive disorders, bronchitis, tuberculosis infections, skin irritations, ulcers, menopausal symptoms, and diabetes. It is also used in combination with buttermilk for dysentery treatment. Fenugreek is employed in medicine for its aphrodisiac, astringent, demulcent, carminative, stomachic, diuretic, emmenagogue, emollient, expectorant, lactogogue, restorative, and tonic properties. Fenugreek leaves can be used as a gargle for treating mouth ulcers.

Aniseed (Saunf)

Aniseed, known as Saunf, is the small, dried seed of an annual herb native to the East Mediterranean region. While primarily cultivated in a small area in India, it is also grown in Rajasthan, Punjab, Uttar Pradesh, and Orissa. Aniseed's major compound, anethole, offers a flavour reminiscent of liquorice and is commonly used as a mouth refresher after meals. An infusion of fennel is utilized to counteract flatulence and is mildly carminative, beneficial for treating colic pain. Aniseed finds extensive use as a natural raw material in pharmaceuticals, perfumery, food, and cosmetic industries, with its essential oil employed in aromatherapy to treat colds and flu.

Caraway (Shahi Jeera)

Caraway, comprising black dried seeds with a pleasant aromatic flavour, contains around 5% essential oil. The primary flavouring compound, D-carvone, alongside D-limonene, imparts its characteristic taste. Anciently, caraway oil was utilized by women for enhancing beauty. The combination of black cumin and caraway seed oils has been utilized to combat parasites, detoxify the body, alleviate amoebic dysentery and shigellosis, treat abscesses, old tumours, mouth ulcers, and rhinitis. Caraway acts as a mild stomachic and carminative.

Bay Leaf (Tejpatta)

Bay leaf, scientifically known as Laurus nobilis, hails from the Lauraceae family and is native to the Mediterranean and Asia. These dried aromatic leaves, containing 1–3% aromatic oil, are utilized in pickling spice preparation and vinegar flavouring. Possessing stimulant and narcotic properties, bay leaf helps alleviate joint, chest, womb, and stomach pains, while stimulating gastric functions to aid digestion.

Asafoetida (Heeng)

Asafoetida, commonly referred to as Heeng and dubbed ‘Food of the Gods’, originates from Iran and Afghanistan. It is an oleo-gum resin exuded from the rhizome or root of Ferula asafoetida. Its flavour comes from the presence of a ferulic ester and sulphur-containing volatile oil. Asafoetida is rich in protein, fibre, carbohydrates, calcium, phosphorus, iron, niacin, carotene, and riboflavin. Widely available and used in every household, asafoetida is effectively employed in treating indigestion, menstrual pain, earaches, body pains, and toothaches. It acts as an antimicrobial agent, boosts detoxification enzyme levels in the body, and is utilized in treating chronic bronchitis and whooping cough.

Cumin (Jeera)

Cumin seeds, or Jeera, are predominantly cultivated in India, Syria, Iran, and Turkey, belonging to the Apiaceae family. India holds the largest share, accounting for 70% of global cumin production, followed by Syria. With an essential oil content of 2 to 4%, cumin seeds contain the active compound aldehyde cumino. Consuming warm water infused with cumin rehydrates the body and enhances saliva secretion, aiding digestion. It also promotes breastfeeding in lactating mothers, lowers blood sugar levels, increases haemoglobin levels, and acts as a potent antioxidant due to the presence of anticarcinogenic agents like thymol and dithymoquinone.

Poppy Seeds (Afeem ke beej)

Poppy seeds, obtained from the poppy plant (Papaver somniferum), are small kidney-shaped oilseeds packed with nutrients such as thiamin, folate, calcium, iron, magnesium, manganese, phosphorus, and zinc. They provide 525 Calories per 100 grams and consist of 6% water, 28% carbohydrates, 42% fat, and 21% protein. In traditional Indian medicine, they are utilized as a skin moisturizer. Poppy seeds are pressed to extract poppy seed oil, a valuable commercial oil with numerous culinary, industrial, and medicinal applications.

Nutmeg (Jaiphal)

Nutmeg, derived from the dried and hard seed or pit of the nutmeg fruit, and mace, the orange-red fleshy covering of the nutmeg, contain 7–14% essential oil, which includes the highly toxic compound myristicin. Both nutmeg and mace possess antimicrobial properties.

Saffron (Kesar)

Saffron, known as Crocus sativa and cultivated in the dry land of the Kashmir valley, derives its name from the fragrant stigma found in the flower of the saffron plant. With a unique aroma among spices, saffron is highly valued and expensive. It takes 75,000 flowers to produce one ounce of pure saffron. This spice contains essential oil crocin and the colouring principle crocerin, and it is used as a sedative and for treating eye infections.

Mangosteen (Kokum)

Kokum (Garcinia indica) is cultivated in the western ghats in the Konkan, Goa, South Karnataka, and Kerala. Its ripe fruit is dark purple due to anthocyanin content, and it boasts sufficient malic acid. The colourful red juice extracted from kokum is used in beverage manufacturing.

Fennel Flower (Kalonji)

Kalonji, commonly found in Indian kitchens, possesses various medicinal properties. Nigella sativa, an annual flowering plant native to southwest Asia, is known for its carminative, diaphoretic, digestive, diuretic, emmenagogue, excitant, lactagogue, laxative, expectorant, antipyretic, antihelminthic, resolvent, stimulant, sudorific, and parasiticide properties. Kalonji is effective in treating conditions such as dog bites, paralysis, facial palsy, migraine, and amnesia. Its powder, when taken with water, is beneficial for haemorrhoids, and a vinegar solution of boiled seeds can alleviate inflammation and tooth pain. Black seed oil has been a beauty secret since ancient times and is also known for its anti-parasitic activity.

Mint (Pudina)

Mint, derived from the Greek word "minthe," is a widely used spice with about 25 species in the genus Mentha of the mint family (Lamiaceae). It is utilized as a herbal remedy for various conditions including loss of appetite, bronchitis, sinusitis, the common cold, fever, nausea, vomiting, and indigestion.

Caper (Kanthari)

Caper bushes, also known as Flinders rose, are perennial herb plants bearing spiral, fleshy leaves and large white to pinkish flowers. Caper buds, often pickled and used as a seasoning, are the most well-known edible part of the plant. Other varieties of Capparis, along with C. spinosa, are also valued for their buds or fruits. Various parts of Capparis plants are utilized in the production of medicines and cosmetics. Enzymatic reactions lead to the formation of rutin, which manifests as crystallized white spots on the surfaces of individual caper buds.

Alkanet (Ratanjot)

Alkanet, belonging to the borage family Boraginaceae, encompasses several related plants, with Alkanna tinctoria being the primary source of a red dye. In Indian cuisine, alkanet, known as 'Ratan Jot', imparts its red hue to dishes like Rogan Josh. In folklore medicine, Alkanna tinctoria is utilized to treat abscesses and inflammations.

Tamarind (Imli)

Tamarindus indica, a leguminous tree, produces pod-like fruit with edible pulp widely used in global cuisines. Apart from culinary use, tamarind pulp finds applications in traditional medicine and metal polishing. The taste of tamarind fruit is sweet and sour, rich in tartaric acid, sugar, B vitamins, and calcium.

Star Anise (Chakraphool)

Licium verum, native to northeast Vietnam and southwest China, yields star anise, a spice closely resembling anise in flavour. Star anise oil, highly fragrant and used in various products, is obtained from the star-shaped pericarps of its fruit. A significant portion of the world's star anise crop is used for extracting shikimic acid, a key ingredient in oseltamivir (Tamiflu) synthesis.

Liquorice (Mulethi)

Liquorice, derived from the root of Glycyrrhiza glabra, offers a sweet flavour extract. Though not botanically related to anise or fennel, liquorice has similar flavouring compounds. It has been utilized in herbalism and traditional medicine. Excessive consumption, however, may lead to adverse effects like hypokalaemia, increased blood pressure, and muscle weakness. In Ayurveda, liquorice is used for rejuvenation and potentially aiding jaundice and other ailments.

Mace Spice (Javitri)

Mace Spice, commonly known as Javitri, is a spice derived from the seed of the nutmeg

tree (Myristica fragrans). The javitri or aril has a reddish-brown colour and a delicate, aromatic flavour that is slightly sweeter and milder than the nutmeg kernel. It is often used in powdered form or as whole pieces in both sweet and savoury dishes to impart a warm, spicy flavour and aroma. In traditional medicine systems like Ayurveda, it is believed to have various health benefits, including digestive aid, anti-inflammatory properties, pain relief, and even aphrodisiac effects. However, it's essential to use javitri in moderation as excessive consumption can lead to toxicity due to its high concentration of certain compounds.

In addition to its culinary and medicinal uses, javitri is also valued in perfumery and aromatherapy for its rich, warm fragrance. Its essential oil is extracted and used in perfumes, candles, soaps, and other scented products for its aromatic qualities.

Thus, Indian spices are revered not only for their flavourful contributions but also for their extensive medicinal qualities. From turmeric's potent anti-inflammatory properties to ginger's digestive benefits, these spices offer a wealth of health advantages. Moreover, ongoing scientific investigations are continually unveiling the remarkable potential of these culinary gems in addressing various health issues, from chronic ailments to infectious diseases.

However, it's crucial to recognize that the efficacy of Indian spices in medicinal applications can vary based on factors such as dosage, preparation methods, and individual health circumstances. Additionally, incorporating these spices into one's diet should complement conventional medical treatments rather than serve as replacements.

As global interest in holistic health and traditional medicine expands, there's a renewed appreciation for the ancient wisdom inherent in practices like Ayurveda, which has long acknowledged the therapeutic properties of spices. By integrating these spices into daily cooking, not only do dishes become more flavourful, but overall well-being is also promoted.

Ultimately, while Indian spices undoubtedly enhance culinary experiences, their potential to support health and longevity renders them invaluable additions to both kitchen pantries and medicine cabinets. This fosters a holistic approach to wellness that respects both tradition and modern scientific insights. As research in this realm continues to progress, the profound health benefits of Indian spices will undoubtedly remain a captivating subject of exploration for years to come.

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The Rhythmic Roast:

How Ambient Sounds shape our Café Experience

Mr. Chetan Gogia

As an audiophile working in the coffee machine industry, I have a unique perspective on the interplay between sound and the coffee shop environment. While the aroma of freshly brewed coffee and the taste of a perfectly crafted espresso are often celebrated, the ambient sound of a café holds considerable importance. Whether it's the hiss of an espresso machine, the murmur of conversations, or the rhythmic background of music, ambient sound plays a significant role in shaping the experience of every coffee lover.

Enhancing the Coffee Experience

Creating a Welcoming Atmosphere:

The right ambient sound can make a coffee shop feel cozy and inviting. Soft background music, the gentle conversations, and the rhythmic sounds of coffee preparation can create a sense of comfort and relaxation. This atmosphere encourages customers to linger, enjoy their coffee, and perhaps indulge in a pastry or two. For many, coffee shops are the perfect place to work or study. The ambient noise in a café can provide a level of stimulation that helps with focus, creativity, and boosts productivity. Studies have shown that moderate levels of background noise can enhance cognitive performance, making coffee shops ideal for those looking to get things done.

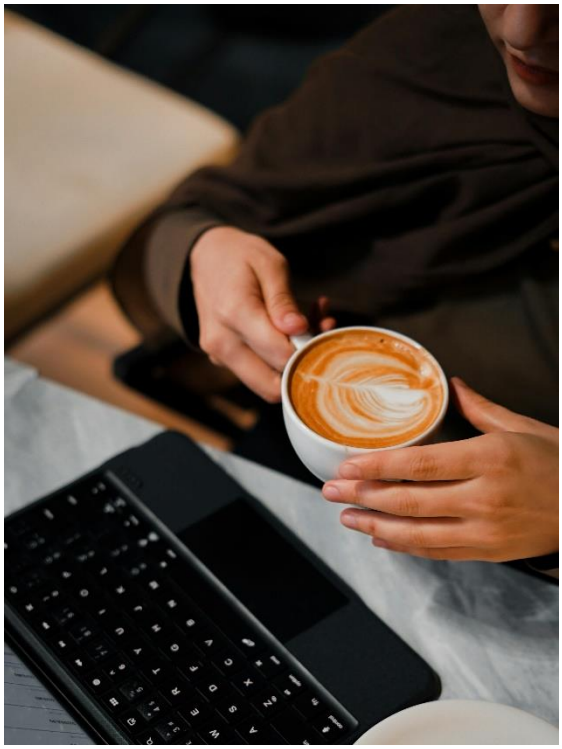
Influencing Taste Perception:

Believe it or not, the sounds we hear can affect how we perceive the taste of our coffee. The clinking of a spoon against a cup or the sound of milk frothing can enhance the sensory experience, making the coffee taste richer and more satisfying. Research suggests that high-pitched, soft background music can make sweet flavours more pronounced, while lower tones can amplify bitterness. Imagine sipping a carefully brewed pour-over while a well-curated jazz playlist subtly highlights its floral notes or experiencing a deep, rich espresso with the grounding resonance of ambient electronica. This multisensory approach can elevate the overall enjoyment of a cup of coffee.

The Role of Coffee Machines

As someone deeply involved in the coffee machine industry, I understand the importance of designing machines that not only perform well but also contribute positively to the café's soundscape. Modern coffee machines are engineered to minimize disruptive noises while maintaining the essential sounds that enhance the coffee

experience. The gentle buzz of a well-tuned espresso machine can be music to an audiophile's ears, integrate smoothly into the ambient soundscape of the café.



The next time you visit your favourite coffee shop, take a moment to appreciate the sounds around you. It's a place where the sounds complement the flavours, where conversations blend seamlessly with the music, and where the equipment hums along without stealing the show. You will appreciate how the ambient noise is more than just background chatter; it's an integral part of the coffee experience. As an audiophile and coffee machine enthusiast, I believe that the symphony of sounds in a café can transform a simple cup of coffee into a memorable sensory journey.

So, sit back, sip your coffee, and let the sounds of the café wash over you. After all, in the world of coffee, every note matters.

Mr. Chetan Gogia is a Regional Service Desk Coordinator at Cimbali Group, London, UK and is passionate about hi-fi music.

Biological Rain

Dr. Wahied Khawar Balwan

Recurrent droughts in several regions of the world and its disastrous impacts on survival of life have necessitated to look for a viable option for harvesting atmospheric moisture. Human efforts have been made to make rain artificially through physical and chemicals means. Recently, in addition to these two, biological agents are also being exploited at experimental levels for harvesting atmospheric moisture. The biological alternative specifically termed as "Bioprecipitation" proved to be economically feasible and practically viable.

INTRODUCTION

Water/moisture is the foremost necessary clause for existence of life on any planet. Earth and its atmosphere have enough moisture / water to support life, but still there is severe scarcity of water in several regions and due to which habitat suffers a lot. Ways and means have been exploited from time immortal by several creatures including human in search of moisture / water to sustain their life. Establishment of many ancient cities on the bank of rivers to have easy and economic access of water exemplified the human efforts in the history. Consequent upon industrial revolution and intensive agriculture, demand of water has increased exponentially that made the scenario for natural rainfall as insufficient to fulfil this demand. All these led to put pressure on human to invent methods to harvest available atmospheric moisture or create rain artificially.

The harvesting of atmospheric moisture / water has been a major challenge in arid and semi-arid regions of the world where water level is abnormally low on account of scanty rainfall. Therefore, an easier and less expensive way must be ascertained to get moisture/water. During the last two decades, several experiments to harvest the atmospheric moisture have been tried and attempts were demonstrated to sustain the habitats' life. These experiments mainly encompassed use of chemical nucleators and other machines and biologically active microorganisms and plants. Chemicals such as silver iodide (AgI), finely powdered sodium chloride (NaCl), solid carbon dioxide (CO_2) mediated artificial rain experiments and were successfully demonstrated the possibility of harvesting atmospheric moisture but proved to be quite expensive and have some harmful consequences to human and environment also, therefore not much preferred. Many plant pathogens and plant surfaces have cutting edge over chemical means owing to their economical and eco-friendly approach. Numerous plant pathogens and plant surfaces have super-hydrophilic or hygroscopic properties and are thus likely to be able to absorb water from atmosphere. The bacteria *Pseudomonas syringae* and *Pseudomonas fluroescens migla* (plant pathogen) and the bromeliads (plants of Bromeliaceae family) are among the best-known examples. These biological classes

that make rain given way to a novel concept of Bioprecipitation.

PHYSICS OF PRECIPITATION

Clouds are aggregate of minute water droplets suspended in the atmosphere. Droplets produced by the condensation process are indeed very small in size, averaging less than 10 microns in diameter, seem to float in the air. Rain drops have diameters ranging from about 200 microns up to 700 microns. The drops larger than this upper limit (500 microns) have capability to fall against air updraft motion. The cloud droplets to join to from large rain drops capable of failing to earth as precipitation. In certain type of clouds, the water droplets do not tend to coalesce and all the time they are kept floating in the air and no precipitation is released from them. On the contrary, in certain cloud forms, the droplets tend to join together, and big size rain drops develop and they are producers of precipitation. Two mechanisms have been proposed to explain these processes namely ice-crystal theory of Bergeron (for clod clouds) and Collision-coalescence theory of Bowen (for warm clouds). Either to condense, to grow or to coalescence, a hygroscopic nucleus is required to be present in the atmosphere.

RAINFALL AND ICE CREATING BACTERIA

Atmospheric moisture varies between 0.2 to 4 per cent and harvesting it through experiments other than chemical means namely water house, wind turbine and bacterial use are some of the recent developments in the field of research aiming to achieve artificial rain. Looking to the severity of demand and its eco-viable vista, research efforts leading to microbes mediated artificial rain or very specifically bioprecipitation has fetched wider global attention. The first ever concept of bioprecipitation was enunciated by David Sands.

The concept of biological rain through bacteria materialized from the basic natural phenomenon that, before a cloud can produce rain or snow, rain drops, or ice particles must form. This requires the presence of tiny particles that serve as the nuclei for condensation. Traditionally minerals were thought to be the dominant ice nucleators in the atmosphere, however, airborne microbes like bacteria, fungi or tiny algae can do the job just as well. Unlike mineral aerosols, living organisms can catalyse ice formation even at temperatures close to 0°C. The new research finding also support that a large variety of macro-organisms including bacteria, fungi, diatoms, and algae, persist in the clouds can be used as precipitation starters. A few physiologically distinct groups of bacteria associated with plants are reported to be capable of ice nucleation “in vitro” and “cause” frost injury of plants. Some of the Bacteria like *Pseudomonas syringae*, *P. fluorescens migla* and *Erwinia herbicola* serve as effective ice nucleators even at relatively high temperatures of –1 to –2 degree Celsius. There is also a remarkable fact that, most known ice-nucleating bacteria are plant pathogens. A recent study confirmed that the rain making bacteria that live in clouds might have evolved the ability to impel showers to disperse them worldwide. Some very potent ice nucleators in decaying plant matter were found that made the surprising discovery that they came from microbes. A few years later, the bacteria *Pseudomonas syringae* was identified as the source of these nucleators; parallelly, Deane Arny discovered that more frost formed on plants infected with *P. syringae*. The rain making potential of

bacteria lies on a mechanism that the bacteria produce a special protein, InaZ, which can act as an ice nucleus at the relatively warm temperature of – 2°C, probably because its repetitive shape is just right for coaxing water molecules into a crystalline arrangement. Air, including clouds, is usually full of micro-organisms like bacteria and fungi, some of which produce ice-nucleators. Ice crystals which form in clouds will grow until they are big enough to fall as either rain or snow depending on whether they melt on the way down. Researchers have detected *P. syringae* in fresh rain, snow, and ice from a wide range of locations including Louisiana, the French Alps and even Antarctica.

MICROBE WATER CYCLE AND BIOPRECIPITATION

Like natural water cycle there exists microbe water cycle also, but in this cycle microbes (Bacteria, Fungi) do not change their physical status. These bacteria and fungi are found as high as 30,000 feet in the atmosphere. The researchers found air mass and hurricanes that spew these bacteria from water and land surfaces into atmosphere. It was observed that mostly marine bacteria, and terrestrial bacteria were originated over water and land. These bacteria were dynamically mixed with other particles and in terms of distribution, there were about 144 bacteria cells found in every cubic foot of air. Reported information suggests that the bacteria get out of clouds and back to Earth and on plants through rain and thus complete the cycle. Like the natural phenomenon, bioprecipitation also requires a source of nucleation; such sources exist both outside and within plants. Outside sources of nucleation include dust particles, organic matter, bacteria and even gas bubbles. These bacteria populate on the surface of many plants' species, and frost formation on such plant surfaces bears a logarithmic relationship to the number of ice nucleating bacteria on the plant surface. A reduction in number of such bacteria on plant surfaces reduces the threshold temperature for frost formation. The same bacteria that cause frost damage on plants can help clouds to produce rain and snow. Studies on freshly fallen snow suggest that 'bio-precipitation' might be much more common than was suspected.

CONCLUSION

Demand of water has increased tremendously, and, in some regions, natural precipitation is not enough to sustain lives. The artificial rain making is a tool and possesses the potential to fulfil, to some extent, the demand of water, but is quite expensive and has limited applicability due to its environmental effects. Bio-precipitation emerged out as a new hope for water harvesting, though it's pro and cons have not been fully evaluated but seems to be economically feasible and practically viable for water harvesting. However, before materializing the concept, a scientifically sound risk-benefit assessment must be executed leading to an explicit prospect of Bioprecipitation.

"Any Error in this manuscript is silent testimony of the fact that it was a Human Effort"

Dr. Wahied Khawar Balwan is a Senior Assistant Professor and Head of the Department of Zoology in Govt. Degree College Doda. Dr. Balwan can be reached at wahied_kb@yahoo.co.in

Creativity and Innovation

Adharv Arora

Creativity and innovation are the twin engines propelling human progress. Creativity is the ability to generate new and unique ideas, while innovation is the process of implementing these ideas to create value. Together, they form the backbone of advancements in technology, art, science, and business.

Creativity involves thinking outside the box and seeing the world from different perspectives. It is not limited to artists or inventors; anyone can be creative by finding novel solutions to everyday problems. Innovation, on the other hand, requires taking these creative ideas and transforming them into practical applications. This often involves risk-taking, experimentation, and perseverance.

The synergy between creativity and innovation leads to breakthroughs that can change the world. For instance, the invention of the internet was a creative idea that revolutionised communication and information sharing. Similarly, the development of renewable energy technologies is an innovative response to the global challenge of climate change.

In today's fast-paced world, fostering a culture of creativity and innovation is essential for organisations and individuals Encouraging active collaboration and continuous learning can unlock the potential for groundbreaking achievements. Ultimately, creativity and innovation are not just about new ideas but about making a meaningful impact on society.

"Creativity is thinking up new things. Innovation is doing new things."
— Theodore Levitt

Adharv Arora is a Class IV student at the Army Public School Damana, Jammu.

Setting-up of Science Laboratories at Upper-primary Schools – Need of the Hour

Mr. Hilal Ahmad Mir

One child, one book and one teacher can change the world.

We are residing in post-modern era where every walk of life undergone tremendous transformation due to advancement in the field of science and technology. Life become easier and comfortable now as compared to past era. Cancer like fatal diseases is treatable now. Internet, Digital banking, and digital marketing empowered modern generation. All the essential facilities and basic amenities are available round the clock. Innovations in every sector of life transformed the world into a Global House.

Now a question arises that students of today are best considered as little scientists, but on the other side they should be trained at upper-primary stage. Due to paucity of science laboratories at upper-primary schools they would get such brilliant momentum to excel in their future endeavours. This is the core of our policy makers and resource persons to think over the setting up of science laboratories to realize the set targets.

Once I raised this question before science experts and resource persons of education department, but they responded through other way by giving the reference of science kits provided by the department for the said purpose.

Curiosity is the mother of science. Our budding scientists have got great talent so if they get opportunity to utilize that potential, they would be our future scientists and engineers.

Laboratories are important in upper-primary education because they provide students with hands-on experience and opportunities to learn through experimentation.

Develops scientific reasoning:
Students can develop scientific reasoning skills and a better understanding of the nature of science.

Enhances science literacy:
Students can improve their science literacy and understanding of complex scientific concepts.

Increases interest:
Students are more likely to be interested in science when they can perform experiments and observe them live in the laboratory.

Develops practical skills:
Students can develop practical skills and learn how to conduct research.

Improves teamwork:
Students can improve their teamwork abilities.

Enhances learning rate:
Students can learn more information at a faster rate.

Develops cognitive abilities:
Students can develop cognitive abilities that are useful for more advanced study or research.

To be most effective, laboratory experiences should be designed with clear learning outcomes and integrated into the classroom science instructions. In addition to the above advantages, establishing laboratories at upper primary schools is crucial and handy for more several reasons:

1. Hands-on Learning: Laboratories provide students with practical, hands-on experiences that reinforce theoretical knowledge. This active learning approach helps students understand scientific concepts better than through lectures alone.

2. Encourages Curiosity: Laboratories stimulate curiosity and foster a sense of inquiry. When students can experiment and observe firsthand, they are more likely to ask questions, explore ideas, and develop a scientific mindset.

3. Promotes Critical Thinking: Lab activities require students to think critically, make observations, hypothesize, test, and draw conclusions. This enhances their problem-solving skills and develops logical thinking.

4. Prepares for Future Education: Early exposure to laboratory work prepares students for higher education and careers in science, technology, engineering, and mathematics (STEM). It provides a foundation for more advanced studies in secondary school and beyond.

5. Improves Retention: Active participation in experiments and activities helps students better retain information. The sensory experience of doing experiments makes learning more memorable and engaging.

6. Fosters Teamwork: Laboratory work often involves group activities, which teach students collaboration, communication, and teamwork—important skills for both academic and professional success.

7. Promotes Safety Awareness: Learning in a lab environment allows students to understand the importance of safety protocols and responsible behaviour, which is essential when working with equipment and chemicals in future education or careers.

Incorporating laboratories into upper primary schools provides students with essential skills and a deeper understanding of the world around them, which can ignite a passion for learning and science.

As a science educator, mentor and facilitator, I always give importance to conducting science practical and observations because science without proof and practice is incomplete and confusing. I make good use of science kit while teaching and showing practical to upper-primary students in classrooms where one feels the need of laboratory so that the little budding scientists can feel that they are experimenting in a unique place and the outcomes would remain surprising and fascinating at the conclusion. Although one manages everything such that learners realize the set objectives, yet queries get raised over time due to nonavailability of science laboratory.

I suggest is that our Policy Makers must think over this visible issue so that in future little buddy scientists would start flourishing from upper-primary stage. This is really need of the hour and need of the era to make our country a developed country.

Mr. Hilal Ahmad Mir is a teacher from the Anantnag District, Jammu and Kashmir. He can be reached at *hilalahmadmir302@gmail.com*.

Women's Mental Health Awareness

Aaryaveer Singh Kotwal

Women are the heart of every family and community. They balance many roles, such as taking care of their families, managing work, and supporting others. However, in handling so many responsibilities, they often forget to care for themselves. Mental health, which is about how we think, feel, and handle stress, is as important for women as physical health.

Women face unique challenges, such as balancing family expectations and work pressure, which can lead to stress or sadness if not addressed. Simple things like encouraging women to share their feelings, giving them time to relax, and supporting healthy habits like good food, exercise, and sleep can improve their mental health.

When women prioritize self-care, they can take time for hobbies, spend moments with loved ones, or even seek professional support when needed. A mentally healthy woman can spread happiness and strength to everyone around her. Let's ensure their well-being for a stronger and happier society!

Q&A

How am I feeling emotionally today?
A) Happy
B) Sad
C) Anxious
D) Overwhelmed

Am I experiencing any physical symptoms?
A) Headaches
B) Fatigue
C) Stomach issues
D) All of the above

Am I getting enough sleep, and is it restful?
A) Yes, I sleep well
B) No, I have trouble sleeping
C) Sometimes, but not consistently
D) I don't know

Do I have a support system I can rely on?
A) Yes, I have strong support
B) No, I feel isolated
C) I have some support, but it's not enough
D) I'm not sure

Am I taking time for self-care and activities for joy?
A) Yes, regularly
B) No, rarely
C) Sometimes, but not often
D) I don't have time for self-care

Aaryaveer Singh Kotwal is a Class V student at the Army Public School Damana, Jammu.

Living with PCOS: Understanding the Challenges and Finding Solutions

Dr. Lankesh Yashwant Bhaisare and
Dr. Desh Deepak Chaudhary

INTRODUCTION

Women of reproductive age are susceptible to the common hormonal disorder known as polycystic ovarian syndrome (PCOS).

PCOS is a complicated and multidimensional disorder to manage since its symptoms, which usually first appear around puberty, can change over time. Hormonal abnormalities, irregular menstrual periods, high testosterone levels, and ovarian cysts are its hallmarks. PCOS is one of the main reasons of infertility because of these symptoms, especially the absence of ovulation, which can seriously reduce fertility. Although there is currently no known cure for PCOS, many of its symptoms can be successfully controlled with medication, lifestyle changes, and fertility therapies. A family history of PCOS or type-2 diabetes greatly raises the likelihood of getting the illness, even if its exact origin is yet unknown.

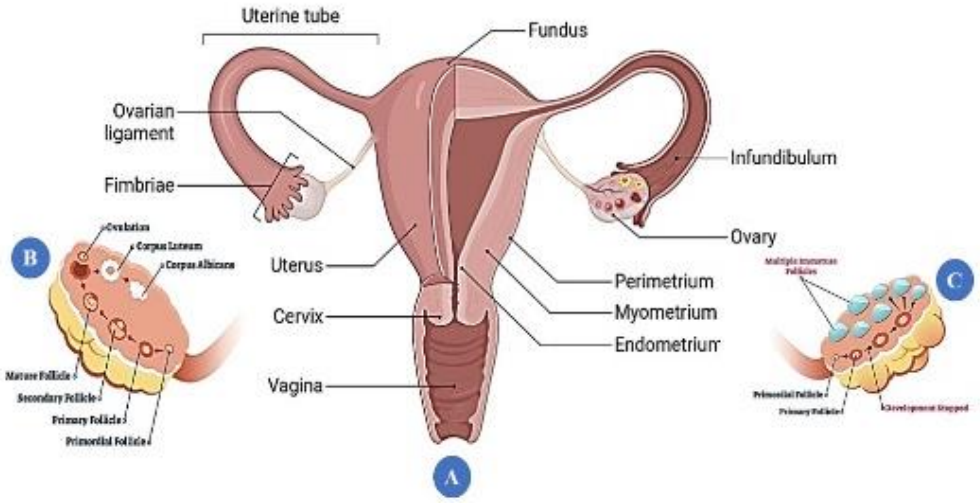


Figure 1: (A) Normal Anatomical Structure of Female Reproductive System, (B) Normal Ovary and (C) Polycystic Ovary (Image Modified from BioRender)

THE POSSIBILITY OF THE PROBLEM

Being one of the most prevalent hormonal conditions affecting women of reproductive age, PCOS poses a significant public health risk. 8–13% of the population is thought to be affected, and because of variations in symptom presentation and diagnostic difficulties, up to 70% of cases go undetected. Certain ethnic groups have a

disproportionately high prevalence of PCOS and frequently face more serious problems, particularly those pertaining to metabolic health.

Beyond just physical health, the illness has an influence on social connections and mental health. Anxiety, depression, and social shame can result from symptoms including obesity, infertility, and issues with one's appearance. Relationships, family dynamics, and professional life are all impacted by these psychological and social issues, which exacerbate the problems experienced by those with PCOS.

SYMPTOMS OF PCOS

The symptoms of PCOS vary widely among individuals and may evolve over time, often without a clear trigger. Common symptoms of PCOS are shown below in the Figure 2.

Figure 2: General symptoms of PCOS

In addition to these symptoms, PCOS is also associated with an increased risk of developing other health conditions as in Figure 3.

Figure 3: PCOS associated health issues

The psychological effects of PCOS, including anxiety, depression, and a negative body image, are often exacerbated by symptoms like infertility and unwanted hair growth. These can lead to social stigmatization, which negatively impacts multiple aspects of life, including family, social interactions, and community involvement.

DIAGNOSIS OF PCOS

Diagnosing PCOS involves meeting at least two of the following criteria:

1. Signs or symptoms of elevated androgen levels, such as excessive facial or body hair, hair thinning, acne, or high testosterone levels in the blood, provided other causes are excluded.
2. Irregular or absent menstrual cycles, after ruling out other possible causes.
3. Polycystic ovaries are visible on an ultrasound scan.

Blood testing can help with diagnosis by detecting hormonal abnormalities such increased levels of testosterone, estrogen, luteinizing hormone (LH), insulin, or anti-Mullerian hormone (AMH). These

indicators do not, however, appear in every PCOS instances. Healthcare professionals also take into account risk factors such a family history of PCOS or type 2 diabetes, the normal irregularity of menstrual cycles throughout puberty or menopause, and the familial inclination for polycystic ovaries when diagnosing PCOS. Furthermore, some women with PCOS may not have polycystic ovaries, therefore the sight of these ovaries on ultrasound is not always indicative.

TREATMENT OPTIONS

While there is no cure for PCOS, various treatments are available to alleviate its symptoms and improve quality of life. Individuals experiencing irregular periods, infertility, or excessive acne and hair growth should consult a healthcare professional for tailored management strategies. Lifestyle modifications, such as adopting a healthy diet and engaging in regular physical activity, are foundational approaches to managing PCOS. These changes can help reduce weight and lower the risk of developing type 2 diabetes.

Medical interventions often include hormonal contraceptives, which regulate menstrual cycles and mitigate symptoms like acne and hirsutism. Other medications may be prescribed to address specific symptoms, such as excessive hair growth or skin issues. For women struggling with infertility due to PCOS, treatments range from lifestyle adjustments and medications to surgical options designed to stimulate regular ovulation. In-vitro fertilization (IVF) is another option, though it carries certain risks and may not be suitable for all patients.

CONCLUSION

Polycystic ovary syndrome is a complex condition with widespread implications for physical, mental, and reproductive health. Despite being a chronic disorder, effective management strategies, including lifestyle changes and medical treatments, can significantly reduce its impact. Greater awareness, timely diagnosis, and personalized care are essential to improving outcomes and quality of life for women living with PCOS.

**All the information is adopted from WHO website*

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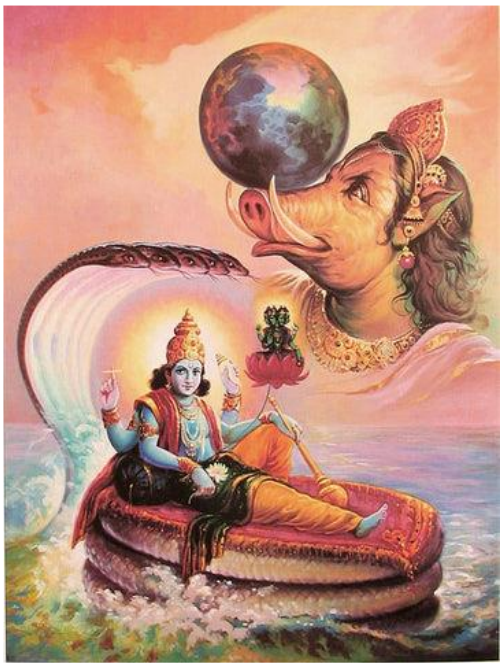
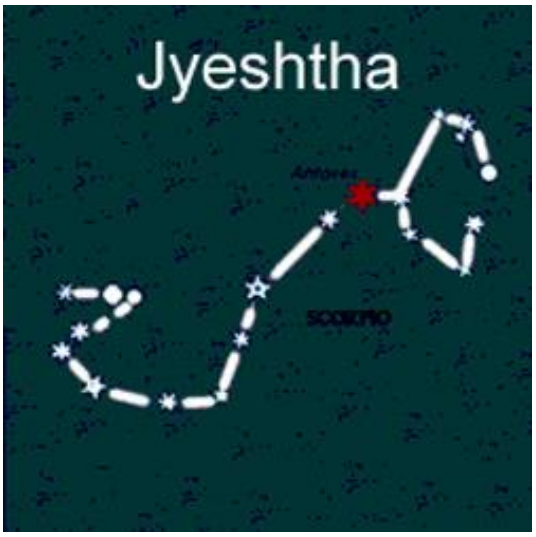
प्राचीन भारतीय ज्ञान

अजय शर्मा

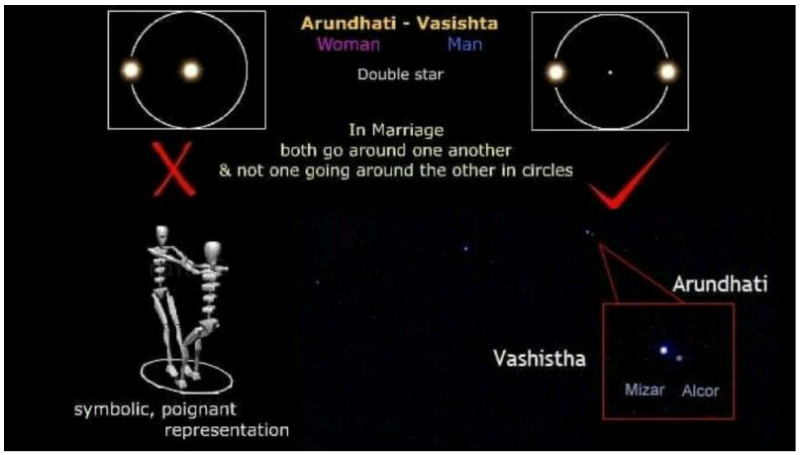


क्या आप बता सकते हैं कि उक्त तस्वीर किसकी है? जी हाँ, यह तस्वीर वराह अवतार भगवान विष्णु के तीसरे अवतार की है। भगवान विष्णु ने वराह अवतार लेकर हिरण्यक्ष का वध किया था और पृथ्वी की रक्षा की थी। वराह अवतार में वराह की नाक के ऊपर आपको क्या दिखाई दे रहा है? जी हाँ, आपने सही पहचाना यह पृथ्वी का चित्र है। क्या आप बता सकते हैं कि पृथ्वी का आकार कैसा दिख रहा है? बिल्कुल सही, गोलाकार दिख रहा है। विचार कीजिए आज से लाखों वर्षों पूर्व जब यह अवतार हुआ तब भी भारतवासियों को यह ज्ञान था कि पृथ्वी गोलाकार है, तभी तो उन्होंने वराह की नासिक के ऊपर गोलाकार पृथ्वी को दर्शाया। अंग्रेजी का शब्द ज्योग्राफी ऐसा विषय है जिसके अंतर्गत पृथ्वी की रचना संबंधित अध्ययन किया जाता है, हिंदी में उसे क्या कहा जाता है? जी हाँ, सही कहा आपने, हिंदी में इस विषय को भूगोल कहा जाता है। भू अर्थात धरती और गोल अर्थात गोलाकार। जब दुनिया ने इस विषय पर अध्ययन आरंभ किया, भारतीयों को तभी से पता था इस धरा का आकार गोल है, इसलिए उक्त विषय का नाम रखा भूगोल। आकर ही नहीं, उन्हें तो धरा की गति का ज्ञान भी था। संसार का एक पर्यायवाची शब्द है जगत, जगत अर्थात जिसमें गति है। हमारे पूर्वजों को यह भी ज्ञान था कि यह संसार गतिमान है। सृष्टि निर्माण का आधुनिक बिग बैंग सिद्धांत भी यही कहता है कि ब्रह्मांड अपनी उत्पत्ति के बाद से ही लगातार विस्तारित हो रहा है।



वृश्चिक राशि में स्थित एक तारा है ज्येष्ठा, यह नक्षत्र भगवान शिव से जुड़ा है। इसका संबंध शक्ति और

ऊर्जा से है। जयेष्ठ अर्थात बड़ा। जरा विचार कीजिए इस तारे को यह नाम क्यों दिया गया? पृथ्वी सतह से देखने पर तो सूर्य ही सबसे बड़ा दिखाई पड़ता है, बाकी अन्य सारे नक्षत्र तो बिंदु आकर के दिखाई देते हैं। जाहिर है, प्राचीन भारतीयों को यह ज्ञान था कि अंतरिक्ष का यह तारा आकार में सूर्य से भी बड़ा है। आज वैज्ञानिक उपकरण दूरबीन का उपयोग कर ज्ञात हुआ कि ज्येष्ठा नक्षत्र का आकार सूर्य से लगभग ३.५ गुना और इसका द्रव्यमान सूर्य के द्रव्यमान से ५ गुना ज्यादा है।



हिंदुओं में एक प्रथा है कि विवाह के उपरांत नव दंपति को तारे दिखाई जाते हैं। यह प्रथा शताब्दियों से चली आ रही है। क्या आप इस रिवाज़ के पीछे का कारण बता सकते हैं? विवाह के उपरांत पति-पत्नी पर उस परिवार की जिम्मेदारी बराबरी की होती है। उस परिवार के अच्छे बुरे समय में पति-पत्नी को समान रूप से कर्तव्यों का निर्वहन करना होता है, ना कोई छोटा और ना कोई बड़ा, दोनों बराबर।

आज नक्षत्र वैज्ञानिकों ने शक्तिशाली दूरबीन से आकाश का निरीक्षण कर यह जाना कि आकाशगंगा में अधिकांशतः ऐसा है कि किसी एक बड़े तारे के गुरुत्वाकर्षण के प्रभाव में दूसरा छोटा तारा उसकी परिक्रमा करता है। एक तारा युग्म, अरुंधति वशिष्ठ जो स्वाति नक्षत्र में स्थित मेष राशि में आता है, ऐसा है जो लगभग बराबर गुरुत्व वाले दो तारे हैं. उनमें कोई एक तारा दूसरे की परिक्रमा नहीं कर रहा है, बल्कि दोनों तारे एक दूसरे के आकर्षण की वजह से समान दूरी पर रहते हुए वृत्तीय पथ पर गमन कर रहे हैं। विशेष उल्लेखनीय है कि यह तारा युग्म सूर्य से ११.७८ प्रकाश वर्ष दूर है। वास्तव में नव दंपति को इन्हीं दो तारों को दिखाया जाता है और संदेश दिया जाता है कि आज से आप दोनों भी उन दो तारों की तरह जीवन पथ पर गमन करना. न कोई बड़ा ना कोई छोटा, परिवार में दोनों का समान महत्व है। जरा विचार कीजिए, आज वैज्ञानिकों ने दूरबीन की मदद से यह जाना कि आकाश में ऐसे भी दो तारे हैं जिनका गुरुत्व समान है और वह साथ-साथ रहते हैं, एक दूसरे को परिक्रमा नहीं करते। यह बात हमारे ऋषि मुनियों ने बिना दूरबीन की मदद से धरती पर रहते रहते ही जान ली थी और विवाह में नव दंपति को तारे दिखाने का रिवाज़ प्रारंभ हुआ।.

आधुनिक खगोल शास्त्री, शक्तिशाली दूरबीन की मदद से यह खोज कर पाए हैं कि हमारे सौरमंडल में सूर्य के परित ९ पिंड परिक्रमा कर रहे हैं। आकर में छोटा होने की वजह से प्लूटो को उपग्रह नहीं कहा जाता है। हमारे मंदिरों में, सदियों पूर्व, प्राचीन काल

से ही नवग्रह की पूजा होती आई है। स्पष्ट है कि हमारे पूर्वजों को नौ ग्रहों का ज्ञान था।

आज शालाओं में पढ़ाया जाता है कि विमान का आविष्कार ऑरविल और विल्बर राइट ने सन १९०३ में किया था। क्या आपने रामायण में सीता हरण वाला वाक्या सुना या पढ़ा है? जरा बताइए, रावण. माता सीता को जंगल में हर कर किस मार्ग से लंका की ओर ले गया था? जी हाँ, सही कहा आपने, वायु मार्ग से। वायु मार्ग से जाने के लिए रावण ने किस साधन का उपयोग किया था? जी हाँ, रावण ने पुष्पक विमान का उपयोग किया था। स्पष्ट है, रामायण काल अर्थात आज से लाखों वर्ष पूर्व, त्रेता युग में भारतीय उपमहाद्वीप में लोग विमान का उपयोग करते थे। भारतीय महर्षि भारद्वाज ने अपने ग्रंथ विमानिका शास्त्र में विमान के निर्माण, उड़ान और संचालन के बारे में विस्तार से बताया है।

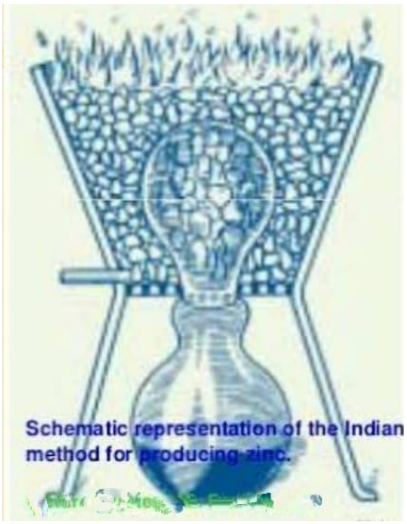
नक्षत्र विज्ञान ही नहीं, गणित विषय में भी भारतीय ज्ञान काफी उन्नत था. आर्यभट्ट द्वारा लिखित पुस्तक आर्यभट्टीय में एक श्लोक है जो गणित और ज्यामिति से संबंधित है;

व्यासतास्त्रे वृत्तस्य पीठमानं सम्यग व्याख्यातुम।
अर्ध ज्या वृद्धिर्वृत्तस्य या शेषभागो व्यातीयतः।।

इसका अर्थ है कि वृत्त के पीठमान (व्यास) को सम्यक रूप से व्याख्यान करने के लिए वृत्त की अर्धज्या की वृद्धि के अनुसार शेष भाग को व्यतीत करने से वृत्त का क्षेत्रफल प्राप्त होता है।

कटापयादि संख्या के अनुसार यदि इस श्लोक के दो शब्दों को अंक प्रदान किया जाए तो यह श्लोक पाइ के मान को दशमलव के ३१ स्थान तक सटीक बताता है।

खगोल विज्ञान गणित के साथ ही धातु कर्म में भी भारतीय ज्ञान बेमिसाल था। उदाहरण स्वरूप दिल्ली में कुतुब मीनार के सामने खड़े लोह स्तंभ को लीजिए। इस स्तम्भ का निर्माण ४०२ ईस्वी में गुप्त वंश के शासक चंद्रगुप्त मौर्य द्वारा करवाया गया था। यह स्तंभ आज भी बिना जंग लगे खड़ा है। इसी प्रकार का दूसरा जंग रोधी स्तंभ कर्नाटक राज्य के कोल्लूर में मुकाम्बिका मंदिर के सामने खड़ा है। इसका निर्माण कदंब वंश के शासनकाल में वहां के निवासियों ने दसवीं शताब्दी में किया था। वर्ष के सात - आठ माह में ७५० सेंटीमीटर होने वाली वर्षा के बावजूद भी यह स्तंभ बिना जंग लगे सुरक्षित है।



इतना ही नहीं आज से दो तीन हज़ार साल पहले अगर किसी को जस्ता (ज़िंक) चाहिए होता था तो उसे भारत ही आना पड़ता था क्योंकि जस्ते का निष्कर्षण केवल भारतीयों को ही आता था। जस्ते का गलनांक ९९७ डिग्री सेल्सियस है और १००० डिग्री सेल्सियस पर यह वाष्पीकृत हो जाता है, इस ३ डिग्री के अंतराल में जस्ते को पृथक करना किसी को नहीं आता था। भारतीयों ने भी वात्याभट्टी को उल्टा कर जस्ता एकत्र करने की विधि खोजी थी।

प्रायः यह देखा जाता है कि रामायण, महाभारत, और गीता पढ़कर, इससे संबंधित चलचित्र देखकर, या कथा सुनकर बच्चे अक्सर आशीर्वाद व श्राप के फलित होने, हनुमान जी के उड़ने की कथा उनके आकार को बड़ा या छोटा करने की क्षमता रखने, संजीवनी लाते समय हनुमान जी के पहाड़ उठाकर उड़ने, ऋषि नारद के एक जगह से अंतर्ध्यान होने और दूसरी जगह प्रकट होने, विश्वामित्र के श्राप से अहिल्या के पाषाण रूप में परिवर्तित होने तथा प्रभु श्री राम के स्पर्श से पुनः नारी रूप धारण करने, श्री कृष्ण के द्वारा एक अंगुली से पर्वत उठाने, संजय द्वारा धृतराष्ट्र को महाभारत के युद्ध स्थल का सजीव विवरण प्रस्तुत करने जैसे प्रसंग की वास्तविकता पर प्रश्न करते हैं। सनातन धर्म में विद्यमान यह कुछ ऐसे बिंदु है जो बच्चे तो क्या बड़ों को भी सोचने पर मजबूर करते हैं।

क्योंकि आज किसी जीवित प्राणी में ऐसी क्षमता परिलक्षित नहीं होती इसलिए कुछ लोग उनकी वास्तविकता हेतु कुतर्क देते भी दिखाई पड़ते हैं। इतना तो तय है कि प्राचीन ऋषि मुनियों के पास आज के व्यक्ति की तुलना में ज्यादा ज्ञान व शक्ति थी। तब का विज्ञान आज के विज्ञान से कहीं ज्यादा उन्नत था। ग्रंथों में दी गई सारी बातों को कपोल कल्पित कहकर नकारा नहीं जा सकता क्योंकि आज का विज्ञान उन में से कुछ की पुष्टि करता नजर आता है।

आज दूरदर्शन पर घटनाओं का पूरे विश्व में सजीव प्रसारण, संजय द्वारा महाभारत युद्ध के सजीव विवरण को महाराज धृतराष्ट्र को सुनने की वास्तविकता के पक्ष में प्रमाण है। आज हवाई जहाज से एक देश से दूसरे देश की यात्रा करना, रावण द्वारा सीता हरण के बाद वायु मार्ग के पुष्पक विमान के प्रयोग की वास्तविकता की और इंगित करता है। आज वैज्ञानिकों द्वारा बड़ी-बड़ी दूरबीनों कि मदद से सौर मंडल के पिंडों को देखकर कंप्यूटर पर गणनाएं करके सूर्य ग्रहण और चंद्र ग्रहण की तिथि व समय बताना और उन्हीं ग्रहण के समय का भारतीय पंचांग में दिए गए समय से मेल खाना इंगित करता है कि हमारे ऋषि मुनियों की गणनाएं कितनी सटीक थी और आज पर्यंत सही साबित हो रही है।

हनुमान चालीसा में तुलसीदास जी ने सूर्य और पृथ्वी के बीच की जो दूरी बताई है 'जुग सहस्त्र योजन पर भानु' आज वैज्ञानिक गणनाएं भी सूर्य और पृथ्वी के बीच दूरी का परिमाण यही बता रही हैं।

ऋषि मुनियों को प्राप्त उन्नत ज्ञान व अविश्वसनीय क्षमताएं कैसे प्राप्त हुई थीं? प्राचीन समय में जो भी ज्ञान का सृजन हुआ वह ऋषि मुनियों द्वारा ही हुआ, ऋषि मुनियों से ही समाज केअन्य लोगों में प्रसारित हुआ। जरा विचार कीजिए, सारा सृजन ऋषियों के माध्यम से ही क्यों हुआ? समाज के अन्य घटकों ने यह सृजन, यह क्षमता हासिल क्यों नहीं की? इस प्रश्न का उत्तर हमें मिलता है जब हम ऋषि मुनियों की जीवन शैली पर विचार करते हैं, उनका जीवन रोज रोटी के लिए किए जाने वाले श्रम से मुक्त था। श्रम से मुक्त होने की वजह से वे सारा समय तप करते थे, ध्यान मग्न रहते थे। उन्होंने सारा ज्ञान, ध्यान के माध्यम से ही हासिल किया था। ध्यान का अभ्यास होने पर खोज करने के लिए किसी उपकरण की आवश्यकता नहीं होती, ध्यान में व्यक्ति आकाश में विचरण कर सकता है, अणु के भीतर भी देख सकता है।

आज की पीढ़ी के पास ध्यान करने की क्षमता ही नहीं है। बच्चों में ध्यान का अभ्यास कराया जाना अति आवश्यक है। भावी पीढ़ी को ज्ञानवान बनाने के लिए आज आवश्यकता है कि शालाओं में अनिवार्य रूप से यम, नियम, आसन, ध्यान, और धारणा की शिक्षा दी जानी चाहिए।

अजय शर्मा डीएवी पब्लिक स्कूल, हुडको, भिलाई, जिला दुर्ग, छत्तीसगढ़ से हैं।

A Window to India's Amazing Past

Ms. Akshita Manhas

India is a land full of history, with many beautiful heritage sites and monuments. These places are not just pretty to look at—they also show how smart and skilled our ancestors were in science and engineering.

For example, the Taj Mahal is not only a symbol of love but also an example of perfect design, strong materials, and clever water systems. The **Iron Pillar in Delhi** has stood for over 1,600 years without rusting, proving the amazing knowledge of metals in ancient India. The **Sun Temple in Konark** is built to match the movements of the sun, showing great skill in astronomy and architecture.

In **Gujarat, the stepwells** show how people saved water long ago, and the **ruins of Hampi** reveal how cities were planned to be smart and sustainable. Each of these places tells a story about India's rich past and the brilliant ideas of our ancestors.

Visiting these monuments is like going back in time to learn about old inventions and designs. Protecting them is important so future generations can also enjoy and learn from these treasures.

These heritage sites are not just part of history—they are proof of the amazing connection between art, science, and culture in India's past.

Ms. Akshita Manhas is a Class V student at the Army Public School Damana, Jammu.

Can you name these heritage site monuments?

Exploring Heritage Sites

Ms. Udvita Bhat

Heritage sites are natural or man-made areas, landmarks, or structures that are recognized for their cultural, historical, or scientific significance.

They are designated as World Heritage Sites by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) World Heritage Committee.

Here are some interesting facts to know about heritage sites:

Purpose

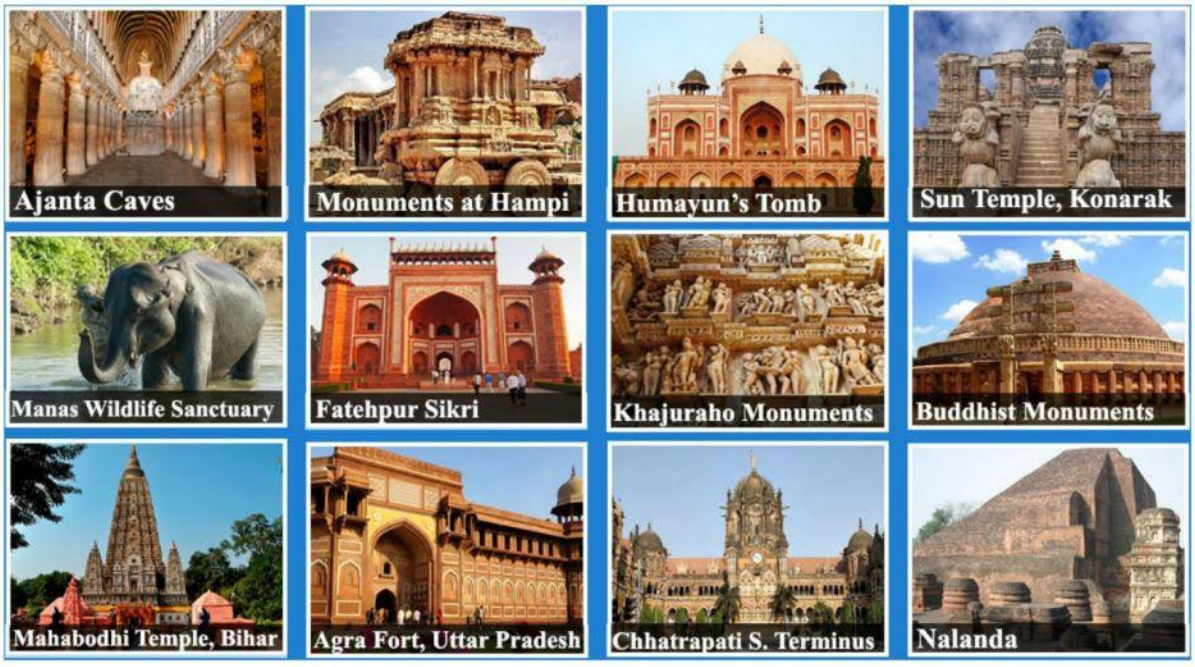
Heritage sites are protected to ensure their preservation for future generations. They are protected from threats like human or animal trespassing, uncontrolled access, and administrative negligence.

Types of heritage sites

There are three key types of heritage sites which include, cultural, natural, and the mixed types.

Selection criteria

To be selected, a site must be geographically and historically identifiable or have a special cultural significance.



Ms. Udvita Bhat is a Class V student at the Army Public School Damana, Jammu.

Science in Tourism

Shubham Sharma

Tourism is not just about exploring new places; it is also an opportunity to learn, experience, and engage with the world in unique ways. Science plays a pivotal role in enhancing tourism experiences, offering visitors a deeper understanding of nature, history, and technology. From eco-tourism initiatives to space exploration, science has transformed how we travel and interact with our surroundings.

Eco-Tourism and Sustainability

Science has revolutionized eco-tourism by promoting sustainable travel practices. National parks, wildlife sanctuaries, and marine reserves use scientific research to preserve biodiversity and ecosystems. For instance, guided tours in the Amazon rainforest or coral reef diving in Australia often include educational components about the local flora and fauna. Advanced technologies like GPS tracking and drone surveillance ensure minimal human impact on these fragile environments while allowing visitors to experience their beauty responsibly.

Science Centres and Museums

Science centres and museums have become popular tourist attractions, blending education with entertainment. Institutions like the Exploratorium in San Francisco or the Science Museum in London offer hands-on exhibits and interactive displays that make science engaging for all ages. Tourists can participate in experiments, learn about cutting-edge research, and gain insights into various scientific disciplines, making their visits both fun and informative.

Space Tourism

One of the most futuristic and exciting developments in tourism is space travel. Companies like SpaceX and Blue Origin are leveraging advancements in rocket science to offer suborbital and orbital flights to private individuals. While still in its infancy, space tourism promises unparalleled experiences, such as viewing Earth from space or experiencing zero gravity. These adventures are made possible by decades of scientific innovation in aerospace engineering and space exploration.

Geological and Paleontological Tourism

Science has also enhanced the appeal of geological and paleontological sites. Destinations like the Grand Canyon in the United States or the fossil-rich Badlands of Canada allow visitors to learn about Earth's history, plate tectonics, and ancient life forms. Guided tours often involve explanations of geological formations,

offering a deeper appreciation of natural wonders.

Technology in Tourism

Modern tourism is deeply intertwined with science and technology. Innovations such as augmented reality (AR) and virtual reality (VR) enhance experiences by recreating historical sites or simulating natural environments. For example, AR apps allow tourists to visualize ancient ruins as they once stood, adding a new dimension to archaeological tourism. Similarly, advances in transportation technology, such as high-speed trains and electric vehicles, have made travel more efficient and eco-friendlier.

Adventure Tourism and Safety

Science plays a crucial role in ensuring safety during adventure tourism activities like mountaineering, scuba diving, or skydiving. Equipment such as advanced climbing gear, underwater breathing apparatuses, and parachutes are products of scientific research and engineering. Additionally, weather forecasting and satellite communication systems help mitigate risks in remote or extreme locations.

Health and Wellness Tourism

Health tourism, including visits to hot springs, mineral baths, and wellness retreats, often incorporates scientific insights into the healing properties of natural resources. Destinations like Iceland's Blue Lagoon combine geothermal science with spa treatments, offering visitors both relaxation and education about volcanic activity and mineral-rich waters.

Science has significantly enriched the tourism experience, making it more educational, immersive, and safe. Whether exploring the depths of the ocean, the mysteries of space, or the marvels of technology, tourists today have unparalleled opportunities to engage with science. As advancements continue, the integration of science into tourism promises even more exciting and meaningful experiences for travellers worldwide.

Shubham Sharma is a student at the Army Public School Damana, Jammu.

Hidden Household Hazards:

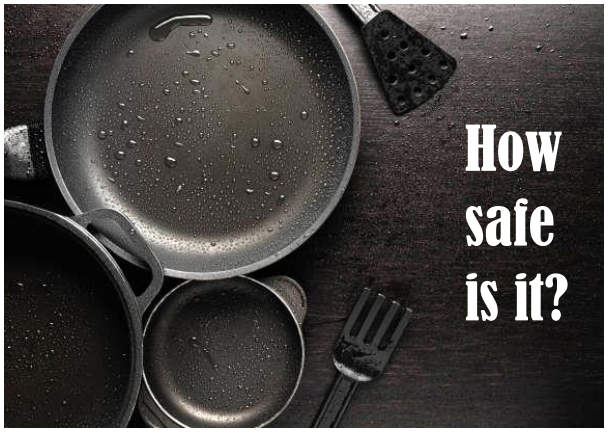
How Everyday Items Could Be Damaging Your DNA and Health

Ms. Meenal Deshmukh

In our quest for convenience and efficiency, we often overlook the hidden dangers lurking in our homes. From the kitchen utensils we use daily to the air we breathe indoors; seemingly harmless items can pose significant health risks. Recent studies have highlighted the potential hazards of black plastic utensils, plastic chopping boards, non-stick pans, and indoor air pollution. This article delves into these issues, presenting two case studies that reveal how these everyday items could be damaging your health and DNA, and offering practical tips to mitigate these risks.

Case Study 1: The Hidden Dangers of Kitchen Utensils

Recent research has revealed that common kitchen utensils, such as black plastic utensils, plastic chopping boards, and non-stick pans, could be releasing harmful chemicals into our food. These everyday items, prized for their affordability and convenience, may pose significant health risks.



Black Plastic Utensils: Many black plastic kitchen utensils are made from recycled electronic waste, which can contain toxic flame retardants like decabromodiphenyl ether (decaBDE). This chemical, banned in the UK and the US, has been linked to cancer, hormone disruptions, and developmental issues. Studies have shown that these utensils can leach decaBDE into food, leading to potential bioaccumulation in the body.

Plastic Chopping Boards: When using plastic chopping boards, tiny particles known as microplastics can be released into food. Research from the University of North Dakota found that chopping vegetables on these boards can release thousands of microplastic particles, which can accumulate in the body and cause health issues such as DNA damage, oxidative stress, and increased inflammation.

Non-Stick Pans: Non-stick pans, often coated with PFAS (per- and polyfluoroalkyl substances), are popular for their ease of use. However, these "forever chemicals" are linked to health problems like liver damage, thyroid disease, and cancer. While modern non-stick pans are considered safer, their long-term health impacts remain uncertain, especially when used at high temperatures or when damaged.

Safer Alternatives: To reduce exposure to these harmful substances, consider switching to stainless steel or food-grade silicone utensils, wooden or bamboo chopping boards, and ceramic or stainless-steel cookware.

Case Study 2: Indoor Air Pollution and DNA Damage

Indoor air pollution is a significant but often overlooked health hazard. Everyday activities like cooking and burning candles can release harmful pollutants into the air, potentially damaging DNA and leading to long-term health issues.

Cooking Emissions: Cooking, especially roasting and frying, generates particle emissions similar to those from car engines. These emissions can cause DNA damage, oxidative stress, and inflammation, increasing the risk of diseases like cancer and heart disease. A study from Denmark found that cooking emissions could lead to DNA damage, which may eventually cause cancer-causing mutations.

Burning Candles: Burning candles, particularly scented ones, can release particulate matter and volatile organic chemicals (VOCs) into the air. These pollutants can cause respiratory issues and contribute to indoor air pollution. Ensuring candles burn steadily and using them in well-ventilated areas can help reduce these risks.

Reducing Indoor Air Pollution: To improve indoor air quality, use cooker hoods while cooking, ventilate your home regularly, and choose cleaner cooking methods. Avoid using products that release VOCs, such as certain cleaning agents and beauty products, and opt for natural alternatives.

Awareness is the first step towards a healthier home environment. By understanding the potential dangers of certain kitchen utensils and indoor air pollution, we can make informed choices to protect our health. Switching to safer alternatives like stainless steel or food-grade silicone utensils, using wooden chopping boards, and improving ventilation while cooking is simple yet effective measures. Additionally, being mindful of the products we use and the air quality in our homes can significantly reduce our exposure to harmful substances. By taking these steps, we can create a safer, healthier living space for ourselves and our loved ones.

Ms. Meenal Deshmukh has a Master of Science in Chemistry and is an Academic Consultant at New Horizon Group of Schools, Navi Mumbai.

Natural Bliss of our Body

Dr. Kumari Nimisha

Every March, the world happiness report is released. In the 2024 World Happiness Report, India ranked 126th out of 143 countries on happiness index. Happiness Index is calculated on various parameters like level of life satisfaction, level of health satisfaction, level of self-esteem etc.

So, what is that which makes others happier and how we can apply these lessons in our own life?

In this era of surging technological advancement, changing lifestyles, and changing values the human biology is lagging. We are advancing no doubt, but at the cost of our mental health. We are forgetting all our natural bliss present in our body. Our core motivation is still rooted in the physiology guided by the hormones in our body.

Hormones, the body's chemical messengers, orchestrate every action we take. They influence our emotions behaviours and perceptions. Our body has a natural system which reacts based on anticipation, expectation of favourable outcomes and rewards.

How is Happiness Measured?

Measuring happiness is not as simple as conducting a survey asking people around the world how happy they are? Any individual answers or responses may vary depending upon their mind set or their mental well-being. The World Poll measures happiness by asking about both emotional well-being as well as life satisfaction. Emotional well-being is a positive experience.

This positive experience is guided by our physiological activities mostly guided by hormones or neurotransmitters. No one can take this from anyone. We as an individual are responsible for our positive experience. Our body has a natural control system known as natural bliss of our body. These happy hormones are the natural bliss they work together to regulate our overall well-being.

Happy Hormones!!

These are a group of neurotransmitters and hormones in our body. Their role is very crucial in regulating mood, emotions and overall well-being.

Serotonin (5- Hydroxy tryptamine, 5 HT):
This neurotransmitter helps in regulating mood, appetite and sleep. It is produced by the brain and intestine. It can be harnessed by being kind to others and yourself, exercising, spending time outdoors and taking a balanced diet.

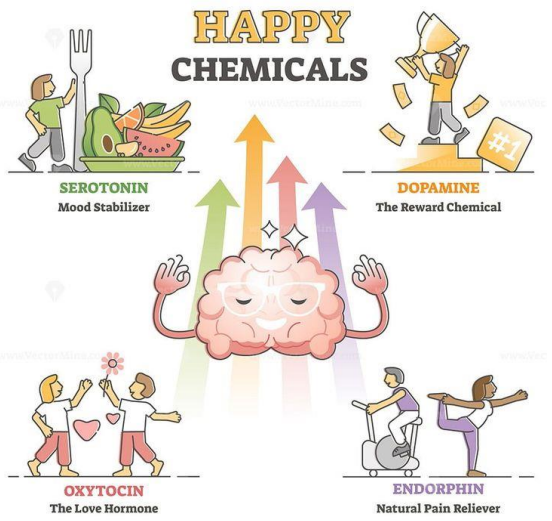
Dopamine (3,4- dihydroxyphenethylamine):
This hormone plays a key role in motivation and reward processing. It is also produced by brain and known as' feel good' hormone. This can be harnessed by listening to music, getting plenty of sleep and being kind to others.

Endorphin (Endogenous Morphine):
These are natural pain killers produced by the body. They are released in response to stress pain or pleasure. They produce feelings of euphoria. It can be harnessed by laughing, meditating, exercising, and spending time outdoors.

Oxytocin:
It is commonly called 'cuddle hormone 'because it is released during social bonding activities. Not technically 'happy hormone' but may help us feel positive emotions. It is produced in our body by showing love and affection.

So, a good daily DOSE (Dopamine, Oxytocin, Serotonin, and Endorphin) of chemicals makes us feel good. Dysfunction of DOSE system causes various diseases. Now it depends upon us how to increase DOSE and keep a good rank on the happiness index.

There are many factors which can help in improving the production of happy hormones. Some of them are as follows:
1. Exercise – A regular routine exercise not only keeps us fit but also makes us healthy and disease free. It also stimulates the production of various hormones like growth hormone (important for repair and growth), Testosterone, Insulin and Thyroid hormone to regulate blood glucose level and metabolism.
2. Involving self in fulfilling activities – These activities bring a smile on our face and keeping a smile on our face, when we encounter different circumstances, can aid the body in the production of serotonin and endorphins, directly associated with happiness.
3. Light exposure to sunlight – Vitamin D is an essential for our body. We get it from milk and milk products, fishes etc. But exposure to sunlight during early morning hours is also very essential. This helps our skin in production of vitamin D and keeps our immune system well.
4. Focus on eating healthy food – Tryptophan is an essential amino acid which our body is unable to produce. It can be sourced from milk, butter, egg yolk, peanuts, almonds, bananas, and other protein food. The body uses this substance to aid in the production of serotonin, the happiness hormone.
5. Meditating – Meditation balances our body. It slows down the production of cortisol, a hormone produced during stress time and replace it with endorphins.



Although the meaning of happiness is different for different people depending upon social status, education, career, health, economic wealth etc. but the chemicals present in our body is same and it should be honoured. If we take care of natural bliss present in our body, we can also be happy and stress free.

Dr Kumari Nimisha is an Assistant Professor at the Department of Chemistry, Govt. Women's College, Gulzarbagh, Patna, Bihar.

Pets and Wildlife

Ms. Anita Rathore

Pets and wildlife represent two distinct categories of animals, each with unique characteristics and roles in human life and the ecosystem.

Pets offer us unconditional love and seek nothing more than our companionship. They are often selfless creatures, showing immense affection and devotion to humans. Pets are truly a blessing, bringing joy and happiness to their owners with their selfless nature.

Many people treat their pets like family members, even celebrating their birthdays. Pets can provide companionship to those who live alone or are elderly. Certain pets, such as dogs and cats, are even approved to visit patients in hospitals or nursing homes for therapeutic purposes. In modern times, the bond between people and their pets has grown stronger, with many treating their pets as if they were their own children.

In contrast, wildlife encompasses animal species that are not domesticated, including all organisms that naturally inhabit an area without human introduction. Lions, for example, are among the largest big and ferocious cats, known for their sharp claws, strong teeth, and ability to run at high speeds. Wild deer on the other hand, are graceful and agile creatures, known for their keen senses and ability to run swiftly through forests Wildlife plays a crucial role in maintaining ecological balance, contributing to biodiversity, and supporting natural processes like pollination and seed dispersal. Unlike pets, wildlife is self-sufficient and thrives without human care. However, human activities such as deforestation and pollution threaten many wildlife species, leading to conservation efforts worldwide.

While pets enrich human lives through companionship and emotional support, wildlife is essential for ecological health and biodiversity. Both require respect and protection to ensure their well-being and the balance of our planet.

Ms. Anita Rathore is a student contributor.

First Aid for Dogs and Cats

Managing Common Diseases and Symptoms

Dr. Mala Mattha

As pet owners, it's essential to know basic first aid for your dogs and cats. They rely on you for their well-being, and understanding how to care for them when they are unwell can make a significant difference in their recovery. Common conditions like mange, cold, cough, fever, itching, and fungal infections are not unusual in pets, and with the right knowledge, you can manage their symptoms and provide comfort before seeking veterinary care.

1. Mange in Dogs and Cats

Mange is a skin condition caused by parasitic mites. It can be either *sarcoptic mange* (scabies) or *demodectic mange*. Dogs and cats with mange typically show symptoms of intense itching, hair loss, scabs, and red, inflamed skin.

First Aid for Mange:

- **Isolate the pet**: Mange is highly contagious, so keep your pet away from other animals.
- **Keep the skin clean**: Gently bathe your pet with mild, hypoallergenic shampoos to help soothe the skin and remove scabs.
- **Topical treatments**: Use over-the-counter treatments like medicated creams or ointments that can help alleviate itching and treat the mites. However, always consult a vet before applying them.
- **Wear gloves**: If you're handling a pet with mange, wear gloves to avoid contamination.

When to See a Vet: Mange requires prescription medications like antibiotics, oral anti-parasitic drugs, and medicated shampoos. A vet may also recommend a skin scrape to diagnose the specific type of mange.

2. Cold, Cough, and Fever

Cold-like symptoms in pets, such as coughing, sneezing, and fever, can be caused by viral infections, bacterial infections, or even allergies. It's important to monitor the symptoms and provide first aid when necessary.

First Aid for Colds, Cough, and Fever:

- **Ensure hydration**: Offer fresh water frequently to help your pet stay hydrated.
- **Rest and warmth**: Ensure your pet stays warm and comfortable in a quiet, cozy area. Rest is crucial for recovery.
- **Humidifier**: Use a humidifier in the room to help loosen mucus and make it easier for your pet to breathe, especially if they are congested.
- **Monitor the fever**: If you suspect your pet has a fever (a temperature above 103°F for dogs, or 102.5°F for cats), you can use a digital thermometer designed for pets to monitor their temperature. Do not administer human fever medication like acetaminophen or ibuprofen, as it is toxic to animals.
- **Coughing**: If your pet is coughing, try to keep them calm and avoid any strenuous activity. Avoid using harsh chemical cleaners or sprays that might aggravate their symptoms.

When to See a Vet: If your pet's fever lasts more than 24 hours or they develop severe coughing, wheezing, or difficulty breathing, consult a vet. Respiratory infections can escalate quickly and may require antibiotics or other treatments.

3. Itching and Skin Irritation

Itching in dogs and cats can have various causes, from allergies to parasites like fleas or ticks. Symptoms include excessive scratching, biting, and licking of the affected areas, leading to raw, irritated skin.

First Aid for Itching:

- **Flea control**: If your pet has fleas, use flea shampoos or flea medication to get rid of them.
- **Anti-itch creams**: Over-the-counter hydrocortisone creams or sprays can help reduce itching. Be sure the product is safe for pets.
- **Oatmeal baths**: Give your pet a soothing oatmeal bath to calm inflamed skin.
- **Cold compress**: Apply a cool, damp washcloth to the affected areas to alleviate discomfort.

When to See a Vet: Persistent itching or if the skin becomes infected (red, swollen, or oozing) requires a vet visit. A vet can perform tests to identify the underlying cause, whether it's allergies, bacterial infection, or parasites.

4. Fungal Infections (Ringworm etc)

Fungal infections like ringworm are common in both cats and dogs. Ringworm can cause circular patches of hair loss with a red, scaly appearance. Other fungal infections may appear as discoloured patches or sores.

First Aid for Fungal Infections:

- **Isolate the pet**: Fungal infections, particularly ringworm, are contagious to both pets and humans, so isolate your pet to prevent spread.
- **Topical antifungal treatments**: Use antifungal creams, shampoos, or sprays available over the counter for treatment.
- **Clean the environment**: Fungal spores can live in the environment, so disinfect your pet's bedding, toys, and any areas where they frequent.
- **Wear gloves**: When treating a pet with a fungal infection, wear gloves to avoid spreading the infection.

When to See a Vet: A vet may prescribe oral antifungal medications or stronger topical treatments, especially if the infection is widespread or persistent.

5. General First Aid for Sick Pets

Regardless of the specific illness or symptom, here are a few general first aid steps for managing your pet's health before getting professional help:

- **Observe the Symptoms**: Keep a close eye on changes in your pet's behaviour, appetite, and energy levels. Monitoring these factors can help the vet make a better diagnosis.
- **Create a Calm Environment**: Keep your pet in a quiet, comfortable space where they can rest and recover. Avoid stressful situations.
- **Consult a Vet**: If your pet's symptoms persist, worsen, or show signs of severe discomfort, it's important to consult a veterinarian promptly.

While first aid for pets can help in managing minor illnesses or injuries, it's essential to remember that professional veterinary care is often necessary to ensure your pet's health and safety. Prompt attention to symptoms like itching, fever, coughing, or skin infections can prevent further complications. Always consult your vet for advice on treatments and medications that are safe for your pet's specific condition.

Dr Mala Mattha is the founder of the Animal Protection Society, Udaipur. *See overleaf.*

Animal Protection Society, Udaipur

Celebrating Three Years of Compassionate Service

A Milestone in Animal Welfare
The Animal Protection Society Udaipur was officially registered on September 11, 2021. As we proudly celebrate our third anniversary, we reflect on a journey filled with challenges and triumphs. Our primary mission is to rescue animals from nearby villages within a 150 km radius of Udaipur, especially in areas where medical facilities are scarce.

Leadership That Inspires
Our president, Dr. Mala Mattha, has dedicated the last 14 years of her life to the welfare of animals. Her tireless efforts have not gone unnoticed; she was nominated for the Padma Shri Award in 2022 and was honoured by the District Collector on August 15 for her remarkable contributions to animal welfare. Dr. Mattha has received numerous awards that highlight her commitment to this noble cause.

Our Dedicated Team
We are proud to have a passionate team that works tirelessly to improve the lives of animals. Our team members include:

- Raj Singh Bhati
- Bhavna Jain
- Avichal Gandhi
- Jaishree Kumawat
- Rukmani Jain
- Bheru Singh Shekhawat

Together, we strive to make a significant impact in our community.

Our Achievements
In our three years of operation, we have undertaken numerous initiatives that showcase our commitment to animal welfare:

- **Rescued Over 5,000 Animals**: We have provided rescue and care for a wide variety of animals, including camels, horses, monkeys, cows, dogs, birds, and pigeons. We have rescued six camels to date.
- **Installed Over 10,000 Water Bowls**: To combat dehydration, especially during hot weather, we have installed over 10,000 water bowls in strategic locations.
- **Reflective Collar Drive**: Our initiative to distribute reflective collars enhances the safety of stray animals by making them more visible.
- **Save Sparrow Mission**: We are dedicated to protecting local bird populations, focusing particularly on sparrows.

- **Rabies Eradication Program**: Through vaccination drives, we aim to reduce the incidence of rabies in the community.
- **Crisis Response Initiatives**: We have provided essential support for animals affected by crises such as the COVID-19 pandemic and the recent lumpy virus outbreak.

Stay Connected

To learn more about our work and stay updated on our initiatives, follow us on social media and visit our website (https://animalsprotectionsociety.org/). Together, let's make a positive impact on the lives of animals in our community!

Animal Protection Society can be reached at:

Address: 87, Roshan Villa, Opp. Vintage Greens, New Bhupalpura,Udaipur, Rajasthan, India

Email: helpline.aps@gmail.com

प्रेसनोट डाट इन

Rescue and Rehabilitation: Radha s Journey to Recovery

(307 बार पढ़ी गयी)
Published on : 06 May, 24 08:05

Radha, a camel, found herself in distress after an unfortunate accident in Mavli Sangwa village. With broken legs and abandoned by her owner, she remained immobile in the village for ten days. Concerned about her well-being, the Udaipur Animal Protection Society stepped in promptly upon receiving the distressing news. Collaborating with villagers, they facilitated Radha's rescue and admitted her to the Udaipur Multispecialty Animal Hospital under the care of Dr. Mehta on May 1, 2024.

Despite the dedicated efforts, Radha's condition did not see improvement due to the scarcity of resources in Udaipur. Understanding the urgency of her situation, Dr. Mala Mattha, the society's president, arranged for Radha's transfer to the Jodhpur Dog Home Foundation on May 5, 2024. In Jodhpur, Radha will undergo crucial surgery followed by the fitting of prosthetic limbs to aid her in standing on her feet again.

The transfer to Jodhpur was overseen by a dedicated team comprising Raj Singh Bhati, Kiran Bhavsar, Bhavna Jain, Dr. Mala Mattha, and Avichal Gandhi. Throughout her ordeal, Radha received care and attention from Dr. Mehta and Dr. Jain in Udaipur, and hopes are high for her successful rehabilitation in Jodhpur.

साभार :

Preliminary Launch Report:

Rabies Ambassador 2025

Dr. Lalit Sharma

Rabies Ambassador 2025 (RA25) programme

One of the core objectives of the **Vigyan Setu Foundation** is to raise awareness and sensitize society about critical animal and public health issues. After the success of three previous initiatives—Zoonoses Ambassador 2022, Zoonoses Ambassador 2024, and Rabies Ambassador 2023—the **Vigyan Setu Foundation** proudly launched the Rabies Ambassador 2025 (RA25) programme on World Animal Day, October 4, 2024.

Rabies, a neglected tropical disease, disproportionately affects marginalized populations, making awareness and prevention efforts among these communities a top priority. The RA25 programme aims to extend its reach as broadly as possible, focusing on raising awareness and promoting rabies prevention through the efforts of prospective Rabies Ambassadors. These Ambassadors will conduct presentations, deliver talks, and hold interactive sessions in schools, colleges, public meetings, and social gatherings. The goal is for the direct beneficiaries to carry the message to their families, friends, and acquaintances, expanding the RA25 programme's impact through indirect education.

Key components of the RA25 programme:

Registration: A total of 217 participants from India and Nepal registered for the RA25 programme. Participants from India represent 14 different states and union territories.

Presentation: The registered participants are organized into six groups, each guided by a dedicated Team Lead. These Team Leads will coordinate activities and ensure that the programme's objectives are met effectively.

Distinguished Team Leads:

Dr Lankesh Yashwant Bhaisare

Dr Lankesh Yashwant Bhaisare did his graduation from Govt. Institute of Science, Nagpur, Maharashtra, Post Graduation in Zoology with specialization in 'Animal Physiology' from Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur, Maharashtra, and completed his Doctoral degree in the subject of Zoology from Indira Gandhi National Tribal University, Amarkantak, Madhya Pradesh.

Currently, he is working as Assistant Professor (Guest) in the Department of Zoology, Govt. Swami Atmanand Post Graduate College, Narayanpur, Chhattisgarh. His area of research is Behavioural and Molecular Science.

Dr Rajesh C Senma

Dr Rajesh C. Senma, working as Assistant Professor in Zoology, Biology Department, M. N. College, Visnagar, Dist. Mehsana, Gujarat. He has 12 years of UG and PG teaching experience. He is a Ph.D. Supervisor and published 11 research papers and 10 books. He is a Director in the AOZ Association of Zoologists and Life member in WCB Research Foundation, Vigyan Gurjari, Bird Conservation Society of Gujarat (BCSG) and Ethological Society of India.

He has actively participated and was honoured as Zoonoses Ambassador 22, Rabies Ambassador 23 and Zoonoses Ambassador 24 launched by Vigyan Setu Foundation.

Dr Deepak Sharma

Dr Deepak Sharma, Assistant Professor of Public Administration, Himachal Pradesh University, Shimla is a distinguished academician and dedicated social worker who has been working for the past 15 years to mitigate animal-human conflict.

His dedicated commitment and wholehearted activities with various NGOs have resulted in the education of animal human conflict and pain of mute creatures. He has played an instrumental role in community outreach, sterilization, and vaccination of community dogs.

His advocation, campaigning and work has been lauded and felicitated by Municipal Corporation Chandigarh, Panjab University Alumni Association-Chandigarh Commission for Protection of Child Rights-National Service Scheme, People for Animals, Animal Lovers Association and Centre for Social Work-PU.

He was the sole person from India who was selected and invited by Dogs Trust, United Kingdom for International Training Programme. His contribution during Covid-19 towards voiceless animals and community was appreciated by Department of Alumni Relations-Panjab University and Tera he Tera (NGO).

Dr Wahied Khawar Balwan

Dr Wahied Khawar Balwan is presently working as Associate Professor in Zoology at Department of Zoology, Govt. Degree College Doda, Jammu and Kashmir, India. He has published 90 research articles in national and international journals of repute, authored 78 books, published about 69 popular articles in different newspapers of the state and national magazines.

He is a recipient of about 65 awards at national and international platform from different educational institutes, academic and research societies. He has attended more than 100 conferences, workshops, different academic courses, and seminars and delivered many lectures as resource person beside chairing the scientific sessions.

He is life member of about 39 academic and research societies.

Dr Smruti Smita Mohapatra

Dr Smruti Smita Mohapatra is a veterinarian with Ph.D. in Veterinary Physiology. She holds a PG Certificate in Agriculture Policy from IGNOU and PG Diploma in Animal Protection Laws from NALSAR. She has worked as a veterinarian in different capacities as – a practitioner, an educator, a consultant, and a researcher. Post-Doctoral studies, she worked as a Research Fellow, at Verghese Kurien Centre of Excellence, IRMA, Gujarat. She deals with research projects on dairy, animal health, cooperatives, indigenous people, pastoralism, and rural development.

She was the Principal Researcher for the research project in IRMA on *Maldhari* pastoralists in Kutch, Gujarat. A passionate science writer, she has many awards and laurels to her credit along with popular, technical research articles and scientific abstracts in various animal husbandry magazines, websites, and national /international conferences. She has been included in the Editorial Board of various magazines. She is a member of international consortiums on pastoralism.

She is a peer reviewer for many scientific journals. She is a resource person for national dairy and poultry farmers' training programmes. IIT, Kharagpur, and IGNOU-NCIDE have adjudged her as a potential innovator. She is a strong advocate of gender-integrated livelihood, animal welfare issues, agriculture policies, UN Sustainable Development Goals, and global climate change.

She is the UT Representative of Pastoral Livestock Census 2024 in Jammu & Kashmir. She is the Team Leader (Documentation) of Regional IYRP Support Group of South Asia, Jammu & Kashmir. She was the Rabies Ambassador 2023 & Zoonoses Ambassador 2024 by Vigyan Setu Foundation in Jammu & Kashmir.

Dr Vikas Mishra

Dr Vikas Mishra is Assistant Professor in the Department of Teacher Education at Akbarpur Degree College Akbarpur, Kanpur Dehat. He is working for science popularisation since last 25 years. His area of science popularisation is social welfare being carried out through lectures, demonstrations, puppetry, and other innovative, and traditional media. He has conducted more than 25 workshops in Uttar Pradesh. He is a team leader, and his team is working in the field of science popularisation through Folk Media. Separate sessions were allotted for his presentation in India International Science Festival (IISF) at Chennai, Lucknow, Kolkata, Goa, Bhopal and Haryana. Authorities of NIScPR New Delhi invited his team for presentation in One Week, One Lab program (OWOL). He also played effective role in NCSC 2023 & 2024.

Dr Vikas Mishra was honoured with the prestigious National Award for Science Communication in the year 2021 by the National Council for Science and Technology Communication, Department of Science and Technology, Government of India (NCSTC-DST-GOI).

Associated Institutions:

Following prestigious institutions have partnered with the RA25 Programme:

- Govt. Swami Atmanand Post Graduate College, Narayanpur (Chhattisgarh)
- Department of Zoology, Govt. Degree College, Doda (Jammu and Kashmir)
- M. N. College, Visnagar (Gujarat)
- Akbarpur Mahavidyalaya, Akbarpur, Kanpur – Dehat (Uttar Pradesh)

Through collaborative efforts and active participation, the RA25 programme aims to create a ripple effect, amplifying awareness about rabies prevention in the communities, both directly and indirectly. This initiative is another step forward in **Vigyan Setu Foundation**'s commitment to improving public health and addressing zoonotic diseases.

Dr. Lalit Kumar Sharma is a family veterinarian, science communicator and the Secretary and Managing Trustee of Vigyan Setu Foundation.