Review Article

A CRITICAL REVIEW ON UPAVISA WITH SPECIAL REFERENCE TO THEIR THERAPEUTICS

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ABSTRACT

Empirical knowledge about medicinal plants plays a vital role in primary health care and has a great potential for the discovery of new drug. Ayurvedic Upavisha is very exclusive in its pharmacetics and therapeutics. Our ancient knowledge suggests that the poison can become a very good medicine if it is administered properly i.e. used in proper dosage, in proper manner and in the proper stage of the diseases. This review is a sincere attempt to summarize the information concerning semi poisonous drugs of Indian system of medicine in respect to their literary survey, modern researches and their wide range of therapeutics.

Keywords: Ayurveda, Upavisha, Sodhana, Literature, Therapeutics

INTRODUCTION

Etymologically ‘Visa’ is that which causes ‘Visannatva’ (distress) and / or visada (Sadness) in the body. Thus ‘Visa’ has been defined as a substance which prove destructive to life and which possess Vyavayi, Vikasi, Usna, Tiksa, Ruka, Suksmna, Asukar, Anirdesya rasa / Apaki etc. properties. And the drugs which possess these properties are called ‘Visas’ and those which are less in virulence than ‘Visas’ are called ‘Upvisas’ (sub-poisons) 1. Vedic literature explained the mode of drug action due to its inherent powder (Veerya) 2. It was long ago when Ayurvedic fundamentals and its eight clinical specialties were documented in the Ayurvedic literatures. 3 Initially Dravyagunya shastra was not mentioned as a separate branch of Ayurveda. But all the treatises contain elaborate descriptions about the herbs, their properties and indications. Charaka identified the necessity of complete knowledge of herbs and their utility in therapeutics. Charaka opined that a deadly poison can become a very good medicine if it is administered properly. 4

Classification

The classification of poison is based on certain basic criteria like origin, base, properties, potency etc. Some of the Ayurvedic classics and texts in medieval period have classified all the poisons into two categories as Maha Visha and Upavisha basing on their toxicity and potency. 5 Upavisha are the group of drugs which were less toxic in nature and not so lethal but produce certain toxic symptoms on consumption or administration. The symptoms produced in the body due to Upavisha are less toxic, less severe, usually not life threatening and their toxicity can be controlled by therapeutic measures. 6 Broadly ‘Visas’ are classified in Sthavara, Jangam and Krtrima types, of these ‘Sthavara Visas’ are those which belong to minerals or to poisonous herbs group while ‘Jangama Visas’ are obtained from the animals kingdom. The ‘Krtrima Visas’ are formed as a result of undesired compounding of drugs. Among the poisonous herbs-tuberous and / or root poisons are more sharp and virulent in their actions. 7

Review of Literature

In literature ‘Rasarnava’ appears to be the first text to mention about ‘Visa’ ‘Upavisa’ classification. After ‘Rasarnava’, ‘Rasa Ratnakara’, ‘Rasendra Cudamani’ and ‘Rasa Ratna Samucchaya’ have mentioned about five ‘Visas’ while other texts like ‘Rasendra Cintamani’, ‘Sangadhara Samhita’, Bhava Prakasa and Ayurveda Prakasa have enumerated nine dravyas as ‘Visas’. The Author of ‘Rasatarangini’ (20th A D) described only ‘Vatsanabha’ in ‘Visa’ group considering its medicinal importance, common availability and frequent use in therapeutics. The other drugs of poisonous nature have been included in ‘Upavisa’ group by this text. The literary review on the subject revealed that there is a difference of opinion amongst the authors regarding the drugs of ‘Upavisa’ group. ‘Rasarnava Kara’ mentioned five dravyas in ‘upavisa; group, while ‘Rasaratna Samucchaya Kara’ and ‘Rasendra Cintamani Kara’ enumerated seven drugs; in later texts like ‘Ayurveda Prakasa’ and ‘Yogaratnakara’ it is raised up to nine while in ‘Rasa Tarangini it has gone up to eleven’. 8, 9 Thus historically there seems to be a gradual increase in the number of poisonous herbs which means more and more drugs have been recognized for their poisonous nature as the time passed. The different poisonous herbs included in ‘Upavisa’ group by various texts are shown in Table 1.

Properties and Pharmacological Properties of Upavishas

‘Caraka’ in the 23rd chapter of cikitsastana has mentioned following ten properties of Visas, viz – Laghu, Ruksa, Asu, Visada, Vyavayi, Tiksa, Vikasi, Suksmna, Usna and Anirdesyarasa. 10 Ruksa, Usna, Tiksa, Suksmna, Asu, Vyavayi, Vikasi, Visada, Laghu and Apaki are the 10...
properties of ‘Visas’ mentioned by ‘Susruta’ in Kalpastrhana, ‘Susruta’ mentions avipaki in place of aniredesyarasa. Acarya Saradhar had mentioned 8 properties of Visas i.e. Vyayavi, Vikasi, Suksm, Chhded, Madavaha, Agneya, Prananask, Yogavahi. Comparison of Pharmacological actions is shown in Table 1.

Importance of Sodhana
The poisonous plants reported in ancient scriptures of Ayurveda are being still practiced widely in a number of diseases after proper Shodhana (purificatory procedures). Ayurvedic physicians successfully employed these drugs after proper Shodhana (processing) known as Samaskara. The concept of Shodhana was mentioned for the first time in Charaka Samhita in the context of Danti Dravanti Kalpadhyaya. To reduce the ‘Vikasi’ property of Danti root, Charaka mentioned it as ‘Samaskara’ Acharya Vagbhata also mentioned the Shodhana of plant drugs in detail in the context of Bhallataka Rasayana and ‘Bhallataka’. The concept of Shodhana in Ayurveda is not only a process of purification/detoxification but also a purificatory procedure to enhance the potency an efficacy of the drug. It is reported that Aconite (Vatsanabha) purified by cow’s urine is converted to cardiac stimulant, whereas raw Aconite is cardiac depressant. It is clearly mentioned in ‘Bhava Prakasa’ that the bad/toxic effects attributed to ‘Aosophita Visas’ are minimized when used after being subjected to ‘Sodhana’ process. Hence ‘Visas’ should be subjected for ‘Sodhana’ before being used in therapeutics.

Various Sodhana Procedures Mentioned for Upavisha
Review of Ayurvedic literature reveals that the following ‘Sodhana procedures’ have been mentioned for different ‘Visopavisa’ drugs.

(i) Gomutra Nimajjana (soaking in cow’s urine) for a prescribed period (ii) Swedana (boiling) in different liquids such as cow’s milk, Goat’s milk, cow’s urine, vegetable extractives and Kanjika etc. (iii) Bharjana (frying) with ghee or without ghee. (iv) Bhavana (Maceration / trituration), with vegetable extractives (v) Nishshehana (reducing of oily content) (vi) Ksalana (washing) with hot water. (vii) Nistvacikara (Decortications). Among the above procedures the treatment with cow’s urine and boiling in cow’s milk are the most common procedures applied for almost all the ‘Visopavisa’ drugs. The details of the Sodhana procedures of each ‘Visopavisa’ drugs are shown in the Table 3.

Therapeutic Spectrum of Upavisha
Kupilu
Strychnos nux-vomica is widespread in its original area of distribution in India, Indo-China and Thailand and is not in danger of genetic erosion. The antimicrobial activity of N-Butanol, Methanol and aqueous leaf extract of two medicinal plants followed Cassia agustifolia and Strychnosnux vomica were tested against the human pathogenic micro-organisms, such as Klebsiella pneumonia, Bacillus subtilis, A niger, A terreus and A. Flavus. The antimicrobial potential of plants was compared according to their zone of inhibition against the several pathogenic organisms. The antibacterial activity of the herbal extracts, indicated by the size of their zones of inhibition, Activity was detected from the ethanol extract. None of the herbal extracts examined showed antibacterial against E. coli or P. aeruginose (gram negative bacteria). Herbal extracts have a greater activity against gram positive bacteria. Identification of targets for suppression of inflammation and cancer. Pharmacologically Strychnos nux-vomica showed anticancer, antimicrobial, anti-inflammatory, antioxidant, and anti feederent activity, Their specific effects on gastrointestinal problem, nervous system, blood glucose level, bones cells and cardiovascular systems have been also investigated.

Snuh
It is popularly known as Sehund, Thohar and Milk Hedge. The leaves are thick succulent, 6 to 12 inches long, ovalur in shape. E. neriifolia hydroalcoholic extract was found to contain sugar, tannins, flavonoids, alkaloids, triterpenoidal saponin on preliminary phytochemical analysis. Several triterpenoids like glut-5-en-3b-ol, glut-5(10)-en-1-one, taraxerol and b-amyrin has been isolated from powdered plant, stem and leaves of E. neriifolia. Neriifolione, atriterpene and a new tetracyclic triterpene named as nerifolene along with euphol were isolated from the latex of E. neriifolia. Antiquorin have been isolated from ethanol extract of fresh root of E. neriifolia. Anti-inflammatory and analgesic effect of E. neriifolia is reported by. There are reports on the mild CNS depressant, wound healing and immunomodulatory activities of the hydroalcoholic leaf extract. E. neriifolia leaves are used as aphrodisiac, diuretic and also used in the treatment of bronchitis, bleeding piles and in ano-rectal fistula. The plant is useful in abdominal troubles, bronchitis, tumours, leucoderma, piles, inflammation, enlargement of spleen, anaemia, ulcers, fever and in chronic respiratory troubles. The aqueous extract of the latex of E. neriifolia facilitated the wound healing process as evidenced by increase in tensile strength, DNA content, epithelization and angiogenesis.

Langali
Gloriosa superba, Liliaceae family is an erect, perennial, climbing herb. Tribesmen of Patalkot apply the rhizome extract over the navel and vagina to induce labour and facilitate normal delivery. According to them, 250 to 500 mg of the extract may lead to abortion if given to a lady with a pregnancy of 1-2 months. It is also used for the treatment of ulcers, leprosy, piles, inflammations. It is used to treat intestinal worm infestations, thirst, bruises, skin problems and snakebite. Gloriosa superba is used for labour induction by traditional birth attendants in India. The tests carried out on G. superba extract indicate that its mechanism of action was neither estrogenic nor progesterone like. However, it is early abortificient activity appears to suggest that its activity is oxytocic. The absence of any effects on the cardiovascular parameters enhances the plant extract’s safety profile in pregnancy Credence to the folkloric use of Gloriosa superba Linn. (Langli) in labour induction.

Arka
Calotropsis procera is small, erect and compact shrub, which is used in several traditional medicines to cure various diseases. This shrub has been known to possess algiesic, antitumor, antihelmintic, antioxidant, hepatoprotective, anti diarrhoeal, antiinflammant, antimicrobial, oestrogenic, antinociceptive, and anti malarial activity. All the parts, viz, root, stem, leaf and flowers of Calotropsis are in common use in indigenous system of medicine. Compounds derived from the plant have been found to have emeto-cathartic and anti-inflammatory properties and also effective on many pharmacological actions. Table 1 shows the various medicinal applications of this shrub plant. The figure 6 shows the chemical structures of some important compounds, reported from Calotropsis procera.
digitalic properties. The principal active medicines are asclepin and nudarin. Other compounds have been found to have bactericidal and vermicidal properties. The latex contains a proteolytic enzyme called calprotopain. An infusion of bark powder is used in the treatment and cure of leprosy and elephantiasis. It is inadvisable to use bark that has been kept for more than a year. The root bark is an emetic, the flower a digestive, and a tonic is used for asthma and catarrh. Bark and wood stimulate lactation in cattle. Roots (extremely poisonous) are applied for snakebite. The milky sap is used as a rubefacient and is also strongly purgative and caustic. The latex is used for treating ringworm, guinea worm blisters, scorpion stings, venereal sores and ophthalmic disorders; also used as alaxative. Its use in India in the treatment of skin diseases, it has caused severe bullous dermatitis leading sometimes to hypertrophic scars. The local effect of the latex on the conjunctiva is congestion, epiphora and local anaesthesia. The twigs are applied for the preparation of diuretics, stomach tonic and anti-diarrheotics and for asthma. Also used in abortion, as an anthelmintic, for colic, cough, whooping cough, dysentery, headache, lice treatment, jaundice, sore gums and mouth, toothache, sterility, swellings and ulcer. Root bark of C. procera exerts anti proliferative action against Hep2 cells via apoptotic and cell cycle disruption based mechanism. The latex is used as an abortifacient, spasmogenic and carminative properties, anti dysenteric, anti syphilitic, anti rheumatic, antifungal, nulluscide, diaphoretic and for the treatment of leprosy, bronchial asthma and skin affection. Different parts of the plant have been reported to possess a number of biological activities such as proteolytic, antimicrobial, larvicidal, nematocidal, anticancer, anti-inflammatory action. Its flowers possess digestive and tonic properties. On the contrary, the powdered root bark has been reported to give relief in diarrhea and dysentery. The root of the plant is used as a carminative in the treatment of dyspepsia. The root bark and leaves of Calotropis procera are used by various tribes of central India as a curative agent for jaundice.

Jaypal

The genus Croton belongs to the family Euphorbiaceae. The Croton oil, the essential oil of SCT, as the effective part, has been reported to have purgative, analgesic, antimicrobial, and inflammatory properties. It regulates the gastrointestinal transit in mice, and affects the inflammatory and immunological milieu. Croton oil causes spontaneous smooth muscle contractions in isolated rabbit jejunum and the underlying mechanisms. From the leaves of C. tiglium, a pyrazine derivative crotonine was isolated which shows significant analgesic effects. C. tiglium has been extensively studied as the source of phorbol derivatives. Phorbol esters have been shown to be responsible for eliciting a markable range of biochemical effects except tumour promoting skin irritant effects, platelet aggregation and cell differentiation. Eight phorbol esters isolated from the C. figlum have the ability to inhibit an HIV induced cytopathic effect on MT-4 cells. Croton oil also have anti leukemic action. The most investigated activity of the phorbol esters protein kinase C (PKC), which plays a critical role in signal transduction pathway and regulates the cell growth and differentiation. An In-vitro and In-vivo Study was done to evaluate the Antinoceptive and Smooth Muscle Relaxant Activity of Croton tiglium L Seed.

Dhattru

D. metel Family; Solanaceae, Phytochemical screening of D. metel seeds revealed the presence of alkaloids, tannins, cardiac glycosides, flavonoids and carbohydrates. Scopolamine (an alkaloid) content of the plant is higher than that of other Datura species. Traditionally it is used to treat conditions like mumps, rheumatism, epilepsy and leprosy. Paste of its leaf along with the turmeric is domestic remedy used to reduce inflammation or along with opium oil to reduce body lice. Smoke of Dhattru leaves used for the treatment of respiratory diseases like asthma. It is principally valued as analgesic, a remedy for violent headache, toothache and piles. Seed were used to treat vertigo, epilepsy and hydrophobia. It has narcotic property. It has significant role in treatment of malaria. It also cures Cholera, chronic diarrhoea, intermittent fever. Datura metel Linn The analgesic and CNS depressant property of the plant is often attributed to the presence of this alkaloid (Tyler et al., 1990).

Gunja

Abrus precatorius is a widely distributed tropical medicinal plant with several therapeutic properties. The seeds are used in various diseases like Indralupta (alopecia), Shotha (edema), Krimi (helminthes), Kushta (skin diseases), Kandu (itching), Premaha (urinary disorders). Abrus precatorius have high antioxidant and anti proliferative activity. Gunja has also been reported for its antitumor anticancer, anti fertility, CNS depressant and analgesic activity in experimental models. Anti spermatogenic, anti diarrhoeal and antihelmintic, also in treatment of ulcer and skin afflictions.

Bhalatanka

Semecarpus anacardium Linn. belongs to the family Anacardiaceae, also called the *marking nut* has been evaluated pharmacologically the following actions. Vadhaman yoga of S. anacardium when administered for 4 weeks shows positive response in periaricular arthritis of shoulder, Sciatic neuralgia and early stage of rheumatoid arthritis along with spondylitis. Bhalataka has been evaluated pharmacologically on the isolated tissue and the whole animal. Anticancer, anti-inflammatory, anti arthritic and antioxidant activity have been reported in experimental animals. Very few studies have been reported on hypolipidaemic, hypoglycaemic, anti atherogenic, anti inflammatory and anti neuroprotective activity.

100 Oil rich fraction of water extract of nut shows inhibition of lipopolysaccharide induced nitic acid production. It has significant effect against FeSO4 induced lipid per oxidation with alcohol extract. The biflavonoids from the stem bark shows dose dependant anti inflammatory activity in carageenan induced paw oedema comparable to that of ibuprofen. Nut extract demonstrated antioxidant and immunomodulatory activity on the compounds of the immune system in adjuvant induced arthritis. Effective regulation of cartilage metabolism and bone turn over in experimental model of arthritis by the nut milk extract has been demonstrated. Cytotoxic effect on the cell of P388 lymphocytic leukaemia was demonstrated by acetylated oil of...
the nut. Anti-mutagenic activity has been shown by ‘Ames test’ with water, alcohol and oil extract of nut.

Karavir

Nerium oleander L. Family: Apocynaceae. It has been used to provoke menstruation, as an abortive, and as an antispasmodic in the treatment of angina pectoris. As an external medicine it is used against all kinds of skin diseases like rash, scabies, ringworm, lice, leprosy and boils, skin eruptions or irritations in herpes and to destroy maggots in wounds. Latex, bark and roots have been used against corns, warts, cancerous carcinoma, ulcerating or hard tumours. Ehanolic extract of Nerium oleander elicited shows typical cardiac glycoside activity with dose-dependent increase in amplitude of contraction and increase the force of contraction of cardiac muscle. Oleanders contain within their tissues cardenolides that are capable of exerting positive inotropic effects on the hearts of animals and humans. The cardiotonic properties of oleanders have been exploited therapeutically and as an instrument of suicide since antiquity. The basis for the physiological action of the oleander cardenolides is similar to that of the classic digitalis glycosides, i.e. inhibition of plasmalemma Na+, K+ ATPase. Three oligosaccharides (OJ1–OJ3) were obtained by acid degradation of crude polysaccharides from Nerium indicum Mill shows anti-angiogenesis activity.

More recently, research has focused on the anticancer effects of oleander and its constituent compounds. Oleandrin inhibits certain kinases, transcription factors and inflammatory mediators, including tumour necrosis factor. This may provide a molecular basis for the ability of oleandrin to suppress inflammation and perhaps tumorigenesis. The authors of this in vitro study suggest that oleandrin may have applications for various diseases, including arthritis, but all require further investigation.

Table 1: Table showing drugs of Upavisa group Enumerated in different Texts

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<tbody>
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<td>Arkaksira</td>
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<td>Datura</td>
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<td>Visa Musti</td>
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<td>9</td>
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<td>+</td>
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Table 2: Table showing the properties and their Pharmacological actions according to different texts

<table>
<thead>
<tr>
<th>Properties</th>
<th>Charaka</th>
<th>Pharmacological Actions</th>
<th>Sushruta</th>
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</thead>
<tbody>
<tr>
<td>Ruksa</td>
<td>Vata Kopana</td>
<td>Vata Kopana</td>
<td></td>
</tr>
<tr>
<td>Usna/Aseeta</td>
<td>Pitta Kopana</td>
<td>Pitta and Rakta Kopana</td>
<td></td>
</tr>
<tr>
<td>Sukama</td>
<td>Rakta Kopana</td>
<td>Penetrates all parts of the body and disturb their healthy state</td>
<td></td>
</tr>
<tr>
<td>Ayakta rasa</td>
<td>Kapha Kopana</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Always follows Anmarasa</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Vyayayi</td>
<td>Spreads all over the body</td>
<td>Spreads all over the body and manifests its own effects</td>
<td></td>
</tr>
<tr>
<td>Tiksha</td>
<td>Destructive to Marma</td>
<td>Causes Mati moha and destruction to</td>
<td></td>
</tr>
<tr>
<td>Vikasi</td>
<td>Pranaabhga</td>
<td>Destroys Dosa, Dhatu, Mala</td>
<td></td>
</tr>
<tr>
<td>Lahu</td>
<td>Durupakrama (Untreatable)</td>
<td>Difficult to be treated</td>
<td></td>
</tr>
<tr>
<td>Vaisadya</td>
<td>Allow Unobstructed movement of Dosas</td>
<td>Causes seven purging</td>
<td></td>
</tr>
<tr>
<td>Asu</td>
<td>Spreads Quickly</td>
<td>Causes sudden death</td>
<td></td>
</tr>
<tr>
<td>Avipaki</td>
<td></td>
<td>Difficult to be digested hence may cause distress in the body for a long time</td>
<td></td>
</tr>
</tbody>
</table>
Table 3: Various Sodhana procedures for individual ‘Visopavasas’ mentioned by different texts

<table>
<thead>
<tr>
<th>Name of the drug</th>
<th>Substance used for Sodhana by different authors along with processes, Duration</th>
<th>Ayurveda Praksha</th>
<th>Yoga Ratnakara</th>
<th>Rasa Tarangini</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Vatsanabha</td>
<td>Cow’s Urine (Immersion – 3 days) Cow’s milk (boiling – 3 hours) Goat’s milk (boiling – 3 hours)</td>
<td>Gomutra (keep and dry in sunshine – 3 days)</td>
<td>Cow’s urine (Immersion for 3 days) Goat’s milk (boil – 3 hours)</td>
<td></td>
</tr>
<tr>
<td>2 Smahi Kastra</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Add ⅓ Cinca drava and dry in sun-shine</td>
</tr>
<tr>
<td>3 Arka Kastra</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4 Datura</td>
<td>Gomutra (Keep – 12 hrs and decorticate seeds)</td>
<td>Gomutra (keep – 12 hrs)</td>
<td>Gomutra Godugdha – Boil – 3 hrs</td>
<td></td>
</tr>
<tr>
<td>5 Karavira</td>
<td>Gomutra (keep – 1 day)</td>
<td>Go Ghrta (Fry)</td>
<td>Godugdha (boil – 3 hrs)</td>
<td>Kanjika (keep – 3 days and decorticate)</td>
</tr>
<tr>
<td>6 Laangali</td>
<td>Gomutra (Keep – 1 day)</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>7 Visamusti</td>
<td>Ghṛta (frying)</td>
<td>Goghṛta (frying)</td>
<td>Go Ghṛta (Fry)</td>
<td></td>
</tr>
<tr>
<td>8 Gunja</td>
<td>Kanjika (boil 3 hrs)</td>
<td>Kanjika (boiling)</td>
<td>Kanjika (boil – 3 hrs)</td>
<td></td>
</tr>
<tr>
<td>9 Ahiphenya</td>
<td>Juice of Ginger (Bhavana)</td>
<td>Juice of Ginger (Bhavana)</td>
<td>Juice of Ginger (Bhavana)</td>
<td></td>
</tr>
<tr>
<td>10 Bhanga</td>
<td>Babbula Tvak Kwatha (boiling) Cow’s milk (Bhavana)</td>
<td>Babbula Tvak Kwtha (boiling) Cow’s milk (Bhavana)</td>
<td>Babbula Tvak Kwtha (boiling) Cow’s Ghee (fry)</td>
<td></td>
</tr>
<tr>
<td>11 Bhallatak</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Istita Ćurna (adding and rubbing followed by washing with water Narikeldakā Boil)</td>
</tr>
<tr>
<td>12 Jayapala</td>
<td>-</td>
<td>-</td>
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</table>

CONCLUSION

The use of traditional medicine at the primary health care level is widespread and plant-based treatments are being recommended for curing various diseases by traditional medical practitioners all over the world. The phytochemicals present in the fruits, vegetables and medicinal plants are getting attention day-by-day for their active role in the prevention of several human diseases. An elegant literary appraisal based on facts derived from 2000-year-old medicinal system to recent researches are indicating the unique methodology of using semi poisonous plants in treatment of various diseases and with very genuineness, these are serving a range of therapeutic objectives with imitable approach on virtue of its unique properties. The objective of this review write up is to ascertain a bridge between traditional wisdom and current trend of treatments where progression of new pioneering invention may be utilized to fortify traditional knowledge.

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