Research Journal of Chemical and Environmental Sciences
Res J. Chem. Environ. Sci. Vol 6 [2] April 2018: 12-20
Online ISSN 2321-1040
CODEN: RJCEA2 [USA]

Website: www.aelsindia.com/rjces.htm

RJCES

REVIEW ARTICLE

Importance of Narcotic Crops and their Alternative uses

Shilpha, S.M.[1*] Mamathashree, C. M.,[2] Pradeep, L.S.[3] Soumya, T. M.[4]
[1,3] Senior research fellow, [2] Ph. D scholar, [4]Assistant Professor
Department of Agronomy, College of Agriculture, UAHS, Navile, Shivamogga
Corresponding author: shilphasm92agri@gmail.com

ABSTRACT
Nature is rich in diversity. There are many different botanicals that have many different uses. Mankind has long sought to harness plants for a variety of purposes. Scientists have conducted research to discover new medicines and cures from plants across the globe. From the opium poppy has come morphine drips in hospitals, from the coca plant has come cocaine which is used in certain medical surgeries, and from the cannabis plant has come various hemp products. While these plants have provided useful products, they are also among nature's most addicting and potentially deadly plants. This exhibit provides an overview of these "Big Three" addictive plants. Here is a constant search for medicines that will improve the quality of life, manage or alleviate pain, and cure diseases. Botanicals are one source for those medicines. They can also be sources for other products and chemicals. Some plants have many serious side effects.
Key words: *Narcotics, alternative uses, Medicinal uses, Drug*

Received 01.02.2018 Accepted 02.04.2018

INTRODUCTION

Biological world is blessed with millions of distinct living creatures, among them narcotic plants are imperative ones. Narcotic crops are the higher plants which contain substantial amount of various bio-chemical constituents which causes unusual excitation and subsequent depression of central nervous system. However, now a days with advancement of science in the field of food, pharmaceuticals, plant protection and industrial usage of narcotic crops to various purposes is common than the purpose for which they were intended to be domesticated and cultivated. Therefore, to know the usage and effects of narcotic crops to relatively new areas of science is an imperative task to unlock their potentiality. Hence, in this context an effort is being made to address the alternative uses of narcotic crops. Narcotics is defined as Crop plants or their products that are used for stimulating, numbing, drowsing or relishing effects such as tobacco, ganja, opium poppy, anise etc.

Table 1. Some of the narcotic crops scientific name, family origin and their chemical compound responsible for narcotic ability

Narcotic crops	Scientific Name	Family	Origin	Economic part	Chemical compound
Tobacco	*Nicotiana tabacum*	Solanaceae	America and islands of Pacific	Leaves and seeds	Nicotine
Arecanut	*Areca catechu L*	Palmaceae	southern Asia	Nuts	Arecoline
Opium	*Papaver somniferum*	Papaveraceae	Mesopotamia	Fruits and seeds	Morphine and codeine
Cannabis	*Cannabis sativa L*	Cannabaceae	Middle East	Flowers and seeds	Cannabinoids (THC)
coca	*Erythroxylum species*	Erythroxylaceae	South America	Leaves	Cocaine
Khat	*Catha edulis*	celastraceae	Northeastern Africa	Leaves and twigs	Cathinone and cathine
Kava	*Piper methysticum*	Piperaceae	Melanesia	Rhizomes	Kavalactones
Anise	*Pimpinellaanisum L*	Apiaceae	Egypt.	seeds	Anethole
Peyote	*LophophoraWilliamsii*	Catcaceae	Northern Mexico	Button like tubercles	Mescaline

The majority of species of narcotic plants are found in the tropics of South America, in North America, and in Central Asia. The narcotic plants include Opium poppy (*Papavers omniferum*), Indian hemp (*Cannabis indica),* Coca plant (*Erythroxylon coca*), Jimsonweed (*Datura stramonium*) and *Datura innoxia, Physochlaina physaloides,* and some other medicinal and toxic plants. The total area under the category of fibre, drugs & narcotics during 2013-14 is 715 ha, whereas it was 917 ha during the year 2012-13. During 2013-14, there are only 9 ha of tobacco cultivated in Kerala and that is in Kasargod district. Majority of narcotic crops are cultivated on illegal basis. Hence current area and production of these crops are not available. Due to some policy and legal issues area and production under narcotic crops are not available [8].

Tobacco: It is one of the major narcotic as well as commercial crops, originated from America and islands of Pacific. Andhra Pradesh is the leading tobacco growing state in India which occupies nearly 50% of the area and production of tobacco. About 90% of cigarette tobacco produced in India is grown in Andra Pradesh. Hokah tobacco is grown in north Indian state. Cigar and cheroot tobacco is grown in Tamil Nadu and Andra Pradesh. Mostly bidi tobacco is grown in Maharashtra [3].

India is the world's 2nd largest producer of tobacco with an estimated annual production of 800 million kgs. Tobacco occupies a meagre 0.24% of the country's total arable land area. It is grown largely in semi-arid and rain-fed areas where the cultivation of alternative crops is economically unviable. The disparity in tobacco production pattern in India vis-à-vis world is due to a unique pattern of tobacco consumption in India dominated by non-Cigarette products. In India, production of Flue-Cured Virginia (FCV) tobacco – a variety used in Cigarettes, accounts for around 40% of total tobacco produced in India. India is the 3rd Largest Producer of FCV tobacco in the world.

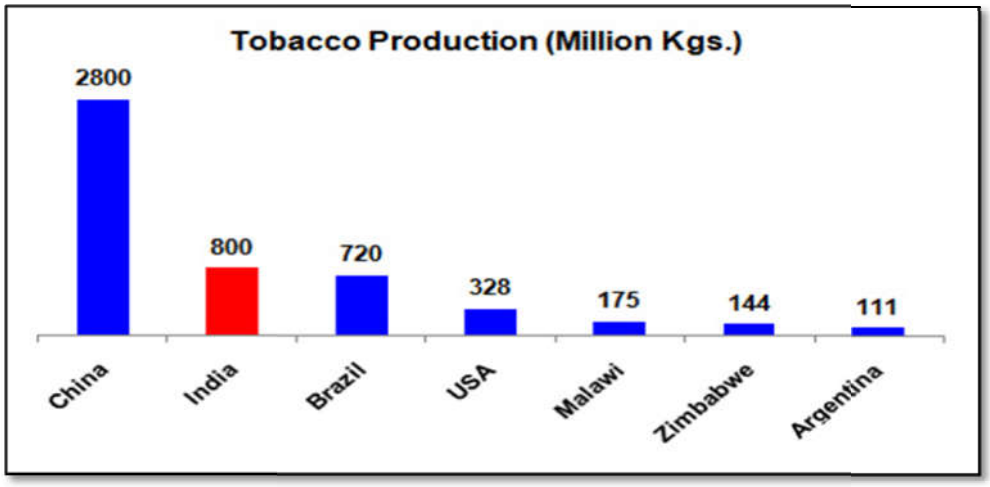

Fig1.Production status of tobacco: world scenario

Solanesol: It is a new bioactive compound which could lead to new drug development. It has been used as starting material for synthesis of vitamin K2 (anthemarrhagic vitamin),vitamin E(anti sterility vitamin) and coenzyme Q10 (physilogically active substances with high pharmaceutical activity against cardiac insufficiency, muscular dystrophy, anemia etc.). As per the latest findings in literature, Japanese scientists have used solanesol derivative n solonesyl-N, N1-bis (3,4-dimethoxy benzyl) ethylenediamine for potentiation of antitumour drugs [4].

Nicotine: This product was tested and found effective in controlling different pests attacking various crops; particularly its action on brown plant hopper and on GLH damage in paddy is noteworthy. Recent scientific evidences indicates that nicotine and nicotine like compounds may slow or ameliorate symptoms of certain diseases like tourette's syndrome, alzheimer's disease, Parkinson's diseases, ulcerative colitis and attention deficit disorder.

Organic acids like malic acid and citric acid obtained as an effluent in the nicotine recovery process was found effective in solubilizing rock phosphate. Apart from the utilization of tobacco waste, the possibility of growing tobacco for recovery of phytochemicals is also being explored at the CTRI. Singh and Jain, 2005, estimated from their study that 380kg crude protein, 97 kg of 40% nicotine sulphate, 18kg of 95+% solanesol and 56 kg of seed oil could be recovered from the crop grown in1ha.

Seed oil content of tobacco seed is estimated to vary from 35-39%.

Nutritional quality of tobacco oil: It is free from nicotine and found to be better than groundnut, mustard and cotton seed oil, on par with sunflower seed oil. The potential of tobacco as an oilseed crop is

firmly established with possibility of producing 1,171kg of seed /ha with an oil recovery potential of nearly 410kg/ha from chewing tobacco variety A145 under Gujarat conditions [10].

Table 2: Comparison of tobacco seed oil with other edible oils

Characteristics	Tobacco seed oil	Groundnut seed oil	Sunflower seed oil
Oil Content (%)	37.0	40.0	35.0
PUFA level (%)	66.7	26.0	63.0
Saponification Value	199	188-195	188-200
Iodine Value	135	82-106	101-135
Acid Value (%)	3.20	0.02-0.6	1-25
Oleic acid (%)	13.2	55.0	-
Linoleic acid (%)	66.7	25.0	-

Source: Anon., 2013. AINRPT, Shivamogga

When tobacco seed oil is compared with other edible oils like groundnut and sunflower seed oil, all the characteristics to be considered for edible oils are superior in tobacco seed oil than groundnut seed oil and sunflower seed oil. However the oil content of tobacco seed is more than the sunflower seed but less than the groundnut seed [6,7].

The World Health Organization's Farm and Agriculture Organization in 1981 raised the possibility of extracting protein from tobacco plants as a means of alleviating world hunger. The possibility remains of producing nicotine-free "tobacco-burgers," either as simulated meat, or actual meat of animals raised and fed on tobacco. Recombinant proteins are being produced using genetically modified tobacco, and therefore there is an excellent possibility that health-promoting tobacco based protein additives could become very important as functional food components [16].

According to Wildman [16], a leading protein chemist, had "properties which make them uniquely desirable as sources of edible leaf protein". Tobacco was the only plant from which the Fraction-1-protein and fraction -2 proteins can be extracted.

F-1-protein -It is a single, large, homogenous protein that makes up half of the plant's soluble protein could be obtained in pure, crystalline form. Its functional characteristics like solubility, stability, foaming, gelling and emulsifying ability are superior to those of egg white, casein and soy protein. All in all, tobacco F-1-p may be the best nutritional and functional food protein. It has also been recommended for a variety of medical uses (e.g., for kidney dialysis patients and as artificial milk for infants).

F-2-proteins -It is a mixture of low molecular weight soluble proteins from tobacco also have favorable characteristics and could be added to soups and beverages to boost nutritional quality. The insoluble proteins could be used to enrich solid foods for human consumption and used as feed for poultry and non-ruminants [14].

When fraction-1 and fraction-2 proteins were compared for their essential amino acid content (g/100 mg), fraction -2 protein is rich in almost all essential amino acids except for the Isoleucine, Leucine, Lysine, cysteine, aspergine,glutamine, glycine and alanine which are rich in fraction -2 protein [16].

Table 3: Per cent protein content in green leaves of different types of tobacco and their varieties

Tobacco type	Varieties	Processed protein (%)
Bidi tobacco	A-119	31.68
	G.T-5	30.22
	G.T-7	30.63
	G.T.H.-1	31.33
Chewing tobacco	A-146	32.81
	G.T.-4	30.22
	G.T.-6	34.55
Tobacco rusticum	G.C.-1	33.34
	G.C.T.-2	31.86

Among bidi tobacco varieties, A-119 variety having highest protein content (31.68%),in chewing tobacco, GT-6 variety having highest protein content (34.55%) and in rustica tobacco G.C.-1 having highest protein content (33.34%). among the different types of tobacco, chewing tobacco having highest protein content (34.55%) [15, 16]**.**

Table 5: Protein efficiency ratio (weight gained/protein consumed) of fraction 1 protein compared to casein as standard

Protein type	Days after consumption of protein			
	7	**14**	**21**	**28**
Casine (standard protein)	2.73	3.17	2.88	2.83
Fraction-1 protein	3.40	3.44	3.10	3.01

Wildman, 1983 conducted a rat feeding experiment to study the protein efficiency ratio of casein and fraction-1 protein. From their study reported that among two proteins, Fraction-1 protein was recorded highest protein efficiency ratio in rats and ratio shows increasing trend as the number of days of consumption increases. This shows that fraction-1 protein having high nutritional quality.

Table 7: Pooled data (2009-12) on protein (%), protein yield (kg/ha), nicotine (%) and nicotine yield (kg/ha) as influenced by bidi tobacco variety and nitrogen levels

Treatment	Protein (%)	Protein yield (kg/ha)	Nicotine (%)	Nicotine yield (kg/ha)
V1-MRGTH 1	1.47	593	0.61	223
V2-GT 7	1.51	540	0.60	216
S. Em ±	0.06	45	0.01	15.0
C.D. at 5%	NS	42	NS	NS
N1-200 kg/ha	1.42	510	0.57	202
N2-250 kg/ha	1.53	576	0.60	225
N3-300 kg/ha	1.53	614	0.64	250
S. Em ±	0.07	18	0.01	12.0
C.D. at 5%	NS	51	NS	NS
Int.	NS	NS	NS	NS

Two genotypes were raised with three nitrogen levels for nicotine content, nicotine yield, protein content and protein yield estimation. Results of three years experimentation were pooled and revealed that among two genotypes, MRGTH-1 was recorded highest protein yield (593 kg/ha), nicotine content (0.61 %) and nicotine yield (223 kg/ha).further, among different nitrogen levels application of 300 kg of nitrogen per hectare was recorded highest protein content (1.53 %), protein yield (614 kg/ha), nicotine content (0.64%) and nicotine yield (250 kg/ha) [6].

Table 8: Effect of graded levels of N and S and their interaction on mean seed yield, oil content and oil yield of chewing tobacco

N levels/ S Levels	Oil content (%)					Seed yield (kg/ha)					Oil yield (kg/ha)				
	0	15	30	45	Mean	0	15	30	45	Mean	0	15	30	45	Mean
Rec. N	40.2	39.6	41.6	40.8	40.5	301.0	318.9	305.0	343.4	317.1	121.0	126.2	126.8	140.1	128.5
125% N	39.9	39.9	40.1	40.7	40.1	277.1	318.2	288.2	273.9	289.4	110.5	126.9	115.5	111.4	116.0
150%N	40.6	40.3	40.2	39.5	40.1	249.6	247.0	288.6	279.1	266.8	101.3	99.5	116.0	110.2	106.7
mean	40.2	39.9	40.6	40.3	-	275.9	294.7	293.9	298.8	-	110.9	117.5	119.4	120.5	-

The results revealed that application of recommended dose of nitrogen was recorded highest seed yield (343.4 kg/ha) with application of 45 kg of sulphur/ha. The oil yields increased from 110.9 kg/ha at no sulphur to 120.5 kg/ha at 45 kg/ha sulphur. Application of recommended dose nitrogen recorded highest oil content (40.5 %) in seed with application of sulphur at 45 kg /ha. Sulphur is responsible for highest oil content, seed yield and oil yield [1-7].

Areca nut: It is the second most important narcotic crop, originated from Southern Asia**.** Seed is the fruit of the areca palm. Its preparations and specific ingredients vary by cultural group and individuals who use it. Chewable drug made from betel nut - a combination of betel palm nut, betel vine leaf, lime and tobacco. This psychoactive product is most commonly used as a recreational drug; it may offer some medicinal or therapeutic properties.

The National Institutes of Health note that betel nut's long-standing reputation as a stimulant. Chewed betel nut produces a stimulant response that, in low doses, is similar to caffeine or nicotine. In high doses, betel nut produces cocaine-like effects including elevated heart rate, high blood pressure, dilated pupils, anxiety, insomnia and cardiac arrhythmia. It owes its popularity as a recreational drug to its euphoric side-effects. According to the NIH, betel nut chewers report feeling happier, more energetic and more alert when using the product. Some users combine betel nut chewing with other psychoactive herbs, such as ephedra, guarana and tobacco. The NIH reports that betel nut is potently cholinergic; it powerfully alters the function of certain neurotransmitters and alters the state of the central nervous system. Drugs in this class produce a myriad of side effects including excessive salivation, increased tearing, urinary and fecal incontinence, sweating, and diarrhea and vomiting. The health information website Drugs.com warns pregnant women to avoid chewing betel nut because it can damage an unborn baby's DNA and harm its development.

Apart from various health hazards arecanut also have some Health benefits viz. Betel nut extract may be beneficial for stroke recovery. According to Inteli Health Improvements have been noted in speech, bladder control and muscle strength in patients taking betel nut extract, although Inteli Health explains that studies so far have been small and flawed. Preliminary research indicates improvements in symptoms for schizophrenia patients who take betel nut, according to the NIH. Although nuts are high in fat, they contain mainly healthy unsaturated fats, rather than saturated fats. Pregnant women should consume at least 5 ounces of protein foods daily. Since each ounce of nuts counts as 2 ounces of protein (Bhat, 1990).

Alternate products of arecanut:

Areca tea: it is in the form of ready to use Tea bags which consist of Processed Areca Granules along with secrete ayurvedic herbs. Areca tea is Sweet to taste even without Sugar as Areca gives natural sweetening. Areca Tea has got natural aroma of areca as well as flavor of Areca. Its been proven that processed areca (Boiled with Traditional method- Denature the Alkaloids) doesn't consist of any harmful chemicals in it. As Areca consists of high parentage of Tannin, Tea concept has been developed (Since Tannin is the main content of regular tea). Areca Nut has been processed in 6 different steps to remove alkaloids leaving all other health beneficial components as it is. Tannin and other health beneficial molecules dissolve in water and can be used as tea. For easy consumption areca tea is converted into tea bags, which will give Aroma of Areca and also Taste of Areca [13].

Dia areca: It is a food supplement to manage sugar level which helps to control diabetes up to 65 and 77%. It is made up of areca nut, betel vine, lime, lemon, jamboo and edible grasses. Best for diabetic patients and also helps in controlling joint pains and back aches. It is the product of tribal medicinal knowledge and is thoroughly subjected to clinical trials and tests on par with CISM, government of India norms. Commonly observed symptoms like exhaustion, dry skin, sleeplessness and pre-mature ageing could be managed by 'Dia Areca'.have no side effects, non-diabetic can also consume for other benefits [5].

Long before the invention of dyes and colors, the tannins from arecanut called 'chogaru' in local vernacular, were used for dying of cloths, ropes etc. and tanning of leather in parts of Asia and Pacific Ocean region. With increasing consciousness against the use of synthetic color in both textile and food industry, the use of Areca tannins assumes great significance in perspective. An attempt is made to use areca tannins in coloring of cloths made from spinning wheel in Heggodu in Shimoga district.

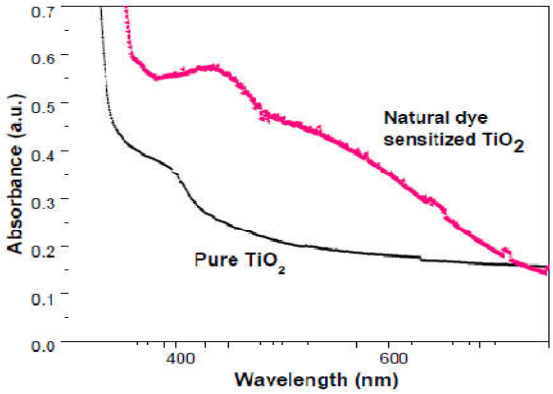

Fig. 2 Absorption spectra of pure and natural dye sensitized TiO_2

The absorption spectra of pure and natural dye sensitized TiO_2 nano particles are shown in Fig. 2. From the spectra, the pure TiO2 nano particle's cutoff wavelength is 356 nm. The band gap of normal or bulk TiO_2 is 3.2 eV and this variation is due to the change in particle size. The band gap increases with decreasing particle size and the absorption edge is shifted to a higher energy with decreasing particle size. The absorption spectrum of natural dye sensitized TiO_2, shown in Fig. 4, proves the enhanced light photon absorption and extension of absorption region due to the adsorption natural dye on the TiO_2 surface [12].

The Fourier Transform Infra-Red spectra of pure and natural dye mixed TiO2 are shown in Fig. 3a and Fig. 4b respectively. Both spectra have the characteristic vibration of Ti - O bond at 646 cm^{-1} and 649 cm^{-1} which normally occur in between the standard range of 450-1000 cm^{-1}.This confirms the formation of TiO_2 nano particles in both samples. The absorption peaks at 1623 cm^{-1} in pure and natural dye mixed TiO_2 is assigned to O – H bending modes. The absorption peaks at 1102 cm^{-1}, 1473 cm^{-1} and 1772 cm^{-1} in natural dye mixed TiO_2 are assigned to the functional groups C – O – C, C – H and C = O respectively. The absorption peaks between 3000 cm^{-1} and 3800 cm^{-1} in pure and natural dye mixed TiO_2 is assigned to O – H stretching vibration mode of water molecules.

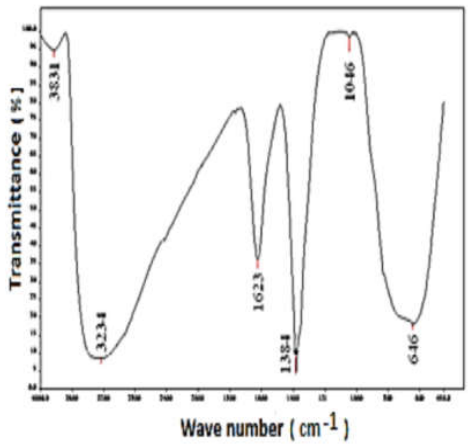

Fig. 3a – FTIR spectrum of pure TiO2

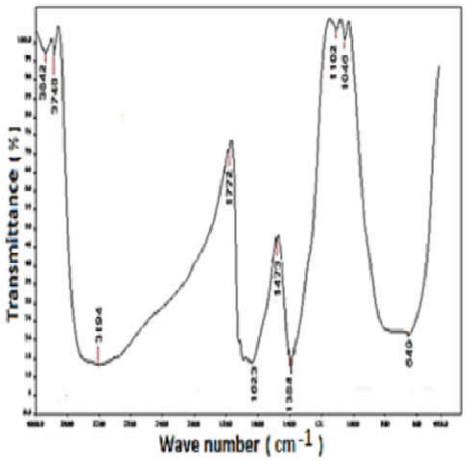

Fig. 3b – FTIR spectrum of natural dye sensitized TiO2

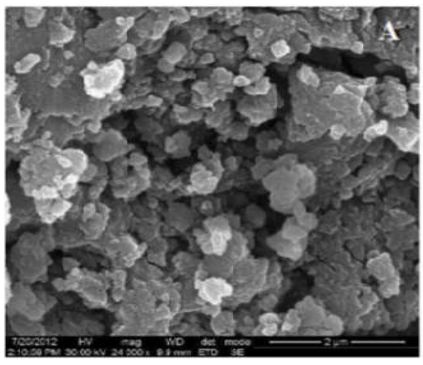

Fig. 4a – SEM Image of pure TiO_2

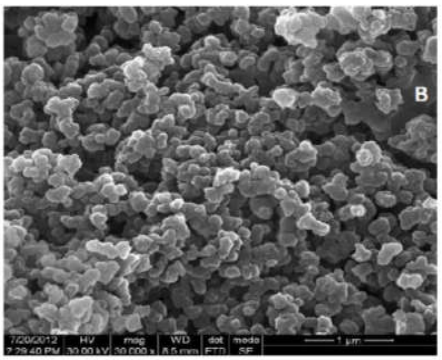

Fig. 4b – SEM image of natural dye sensitized TiO_2

The pure TiO_2 nano particles have agglomerated together to form nano clusters. These nano clusters will affect the photo catalytic behavior of TiO_2 as a photo anode material in DSSC. The agglomeration has reduced to a great extent due to the adsorption of natural dye on TiO_2 surface. The morphology has improved as nearly spherical particles and the nano clusters are reduced [12].

Husk is used for the preparation of tooth brush in Indochina and Philippines region. Areca Stem **is** used for variety of construction purposes and can effectively be exploited for commercial application through development of elegant utility articles such as shelves, baskets, rulers etc. A few attempts have been made to use of arecanut for alternative purposes by developing products such as Masaaj powder, toothpaste, powder, soaps, shampoos, cosmetics, hair oil, dyes, food colors and skin ointments by innovative farmers and others from traditional areca growing region.

Shruthi, [14] from their research study revealed that nearly 70 per cent of consumers and 64 per cent of the traders are willing to consume these socially acceptable products of arecanut in Shimoga with a keen interest in commercialization of innovative technologies. Areca inflorescence is also used as cattle feed. It's an additive for areas where there is fodder problems**.** Chaffed areca inflorescence waste can also used as a cattle feed and it is more nutritive then areca leaf sheath waste and economic also [5].

Fig 5.Areca inflorescence

Opium: The earliest reference to opium growth and use is in 3,400 B.C. The poppy plant produces opium, a powerful narcotic whose derivatives include morphine, codeine, heroin and oxycodone. However, they are some of the most addictive substances known to man. As drugs of abuse, they are often smoked, sniffed, or injected. It is an outstanding medicinal plant, the products of which viz., opium and codeine are important medicines used for their analgesic and hypnotic effects.

Codeine is another component of opium, is medically prescribed for the relief of moderate pain and cough suppression. It has less pain-killing ability than morphine and is usually taken orally. Heroin is first synthesized from morphine in 1874, the Bayer Company of Germany introduced heroin for medical use in 1898. Physicians remained unaware of its addiction potential for years, but by 1903, heroin abuse had risen to alarming levels in the United States. Oxycodone is synthesized from the baine, a third component of opium. Like morphine, it is also used for pain relief.

Besides being used for drug manufacturing, the poppy is also the source of poppy seeds which are greatly prized as a food source. Items such as poppy seed bagels and lemon poppy seed cake are sought after for their delicious flavors [1].

Cannabis (Marijuana): In North America cannabis, in the form of hemp, was grown on many plantations for use in rope, clothing and paper. In India cannabis has been used since as early as 2000 BCE. All forms of cannabis are currently illegal in India, with some limited allowances made for some traditional preparations. In India marijuana is legally cultivated in states like Maharastra, Assam, Andra Pradesh and Uttarakhand.

Uses: *Cannabis Sativa* grows wild throughout many tropical and humid parts of the world. Its seeds have been used for animal feed, its fiber for hemp rope, and its oil as a vehicle for paint. It is most common to use in marijuana candies, marijuana gum and sometimes marijuana cigarettes [2].

Current Medical Use: Research over the years has resulted in the development and marketing of the dronabinol (synthetic THC) product, Marinol®, for the control of nausea and vomiting caused by chemotherapeutic agents used in the treatment of cancer and to stimulate appetite in AIDS patients. In 1999 Marinol® was placed in Schedule III of the CSA. It is used for treating of various diseases like Cancer, Glaucoma, HIV/AIDS, Muscle spasms, Seizures and Severe pain, nausea [2].

Marijuana and hemp have been used in a variety of products. Some of the most common foods and drinks include cereal, candy, coffees and teas. Hemp is also found used in body lotions, make up and shampoo. Some of the products include "Munchy Ways," "Pot Tarts," "Twixed" and "Allmy Joy,"

Coca: It is a highly addictive drug that is processed in jungle laboratories where the coca is extracted from the leaves to produce cocaine. Due to its chemical make-up, cocaine is a highly addictive drug that the body processes as a stimulant. Consumption of this leads many problems include stomach ulcers, severe depression, inflammation or palpitations of the heart, and bleeding in the lungs. Cocaine can also affect the function of the brain and its ability to regulate stress and mood.

Medical Uses: Cocaine was known for its quick numbing abilities. Hence it is popularly used in medicines such as toothache drops, nausea pills and pills to ease sinus pain. **Cocaine** is still has limited use in medicine today as a local anesthetic. It is occasionally used in medical procedures as an anesthetic for skin lacerations, nose or throat surgeries and dental procedures [3].

The extract of the coca leaves used in the flavoring for Coca Cola in United States. The crude cocaine that is left over is used by selected pharmaceutical companies for medicines [11].

Khat:

It is also called Qat or Chat, comes from an evergreen tree which grows at high altitudes extending from eastern to southern Africa. It's a large shrub which can grow to tree size and grow well in full sun or part shade. They also emit a strong smell.

Alternative uses: Leaves are chewed for stimulant and euphoria effects and are used to treat obesity and prevent hunger in areas with meager food supplies. It is exceptionally high in ascorbic acid (vitamin C) act as an antidote to amphetamine-like substances. The practice of chewing is believed to supply users with some of their daily requirements. A khat-based frozen concentrate, "Pisgat" is manufactured and sold in Israel as a healthy food [11]**.**

Kava: It is a crop of the western Pacific. The roots of the plant are used to produce a drink with sedative anesthetic, and entheogenic properties. Kava has mild sedative effects and is used for nervous anxiety, stress, and restlessness. However, clinical information lacks consensus, and there are limited comparative studies, depending on the use. Kava is sedating and is primarily consumed to relax without disrupting mental clarity. Its active ingredients are called kavalactones. A Cochrane Collaboration systematic review of its evidence concluded it was likely to be more effective than placebo at treating short-term social anxiety.

Alternative uses: Used in treating various disorders such as Anxiety, stress and depression, Attention Deficit Hyperactivity Disorder (ADHD), Insomnia and addressing restlessness in individuals, Epilepsy and Chronic Fatigue Syndrome (CFS), Relieves headaches and migraines, Respiratory tract infections including the common cold, TB and Urinary Tract Infections (UTIs), Prevention of cancer, Uterus related problems such as swelling, pain as well as menstrual cramps. It facilitates quicker wound healing and treats leprosy. It works as toothpaste as well as a treatment for cancer mouth sores.

Peyote: It is a small, round cactus with fuzzy tufts instead of spines. It flowers from March through May, and sometimes as late as September. The flowers are pink, with thigmotactic anthers (like Opuntia). Peyote typically grows near shrubbery -especially around limestone (prefering an alkaline soil) and it has been used for centuries by Native Americans for its curative and transcendental properties. It is known for its psychoactive properties when ingested, peyote is used worldwide as an entheogen and supplement to various transcendence practices, including meditation, psychonautics, and psychedelic psychotherapy. Aside from traditional herbal usage by Amerindians, peyote is not used medicinally and nutritionally.

Anise: It is used as a flavoring in alcohols, liqueurs, dairy products, gelatins, puddings, meats, and candies, and as a scent in perfumes, soaps, and sachets. It is frequently used as a carminative and expectorant and also used to decrease bloating and settle the digestive tract in children. In high doses - used as an antispasmodic and an antiseptic and also for the treatment of cough, asthma and bronchitis.

Alternative uses: The oil, when mixed with sassafras oil, is used as an insecticide and applied externally. The oil has been used to treat lice, scabies and psoriasis in animals and human beings. It is also acts as a breath freshener, digestive aid and cure for hiccups, headache, asthma, insomia, nausia and infant colic. It promotes iron absorption in rats and used as a preventative agent in iron deficiency anemia [11].

PROBLEMS ASSOCIATED WITH NARCOTIC PLANTS:

They pose three principal problems:

- They are illegal or at least controlled, so security issues make production and trade both expensive and complicated.
- Considerable stigma is attached to the plants, making it difficult to attract commercial, development interest.
- They are highly politicized, with the result that research support is readily available only for projects that are consistent with the prevailing view that the narcotic plant is dangerous and without redeeming values.

CONCLUSION

All plant species have some unique biochemical characteristics, one never knows which species will be the basis of important scientific and technological developments, and so narcotic plants should not be eliminated a priority from consideration as candidates. Narcotic plants have a long history of use in medicine, there is no doubt that some chemicals from some species are useful, and the search for additional useful constituents could well be fruitful. Among various narcotic crops, opium, cannabis, kava, peyote, anise and arecanut apart from their intended use, they are also used in preparation of pharmaceuticals for the treatment of various diseases in human beings and animals.Tobacco, opium, arecanut and khat are traditionally cultivated for narcotic and drug purpose. However, they can also be used as food additives and in preparation of various industrial products. Controlling narcotics is complex. Hence research should be conducted to examine the possible benefits of converting narcotic species into respectable crops. Genetic engineering offers the possibility of complete inactivation of the enzymes responsible for the production of narcotic constituents. Moreover, morphological markers could be added to facilitate identification of such "harmless" forms of narcotic plants. This not only benefit local economies, but also reduce the narcotics trade, as the land that is dedicated to the narcotic species could be converted to growing non-narcotic varieties of the same species.

REFERENCES

1. Anonymous, (2004a), NIDA Opium Overview.*www.justice.gov. Drug Data Sheet.*
2. Anonymous, (2004b), NIDA Marijuana Overview.*www.justice.gov. Drug Data Sheet.*
3. Anonymous, (2004c), NIDA Cocaine Overview.*www.justice.gov. Drug Data Sheet.*
4. Anonymous, (2012), All India Network Research Project on Tobacco, Anand, Gujarat. *Annual Report 2012-13*: 55-66.
5. Anonymous, (2012), Dia areca- natural method to manage diabetes.*www.sumanLab.com*
6. Anonymous, (2013), All India Network Research Project on Tobacco, Anand, Gujarath. *Annual Report 2013-14*: 60-75.
7. Anonymous, (2013), All India Network Research Project on Tobacco, Shivamogga, Karnataka.*Annual Report 2013-14*: 25-26.
8. Anonymous, (2015), Statistical Year book of 2015. http//..*www.statistic.com.*
9. Bhat ,N. T., (1990), "Altenative uses of Arecanut. *Journal of Plantation Crops.* **19**(6):23-26.
10. Dragan, V., Miodrag, L., Ivana, S. and Svetlana, L., 2007, The extraction of oil from tobacco seeds. *Bangladesh J. Sci. Ind. Res.*,**13**(1):41-50.
11. Ernest, S., (2004), Narcotic plants as sources of medicinals, nutraceuticals, and functional foods.*J. Psychedelic Drugs.***11**: 11-66.
12. Murugakoothan, P., Ananth, S., Vivek, P. and Arumanayagam,T., (2014), Natural dye extracts of areca catechu nut as dye sensitizer for titanium dioxide based dye sensitized solar cells. Journal of nano- and electronic physics, **6**(1): 01003-1-01003-4.
13. Nivedan, N., (2015), Areca tea- Innovative product of the year-2015 by All India Technical Management Council under the concept of Make in India.*www.areca.tea.com*.
14. Shruthi, H.R., (2006), Consumption pattern and demand for arecanut with special focus on emerging arecanut products in Karnataka – an economic study.*M.Sc. (Agri) Thesis*, UAS, Bangalore.
15. Singh, D.K. and Jain, K.C., (2005), Alternative uses of tobacco. *Technical bulletin, Central Tobacco Research Institute (ICAR), Rajahmundry.*p: 124-127.
16. Wildman, S., (1983), An alternate use for tobacco agriculture: proteins for food plus a safer smoking material.*Plants: The Potentials for Extracting Protein, Medicines, and Other Useful Chemicals—Workshop Proceedings*, p: 63-77.

CITE THIS ARTICLE

Shilpha, S.M. Mamathashree, C. M., Pradeep, L.S. Soumya, T. M.Importance of Narcotic Crops and their Alternative uses.. Res. J. Chem. Env. Sci. Vol 6 [2] April 2018. 12-20