**An Overview on Tobacco: Poisoning, Addiction and De-Addiction – Ayurveda and Contemporary Perspective**

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**Abstract:**

Tobacco (Tambhakhu) is the leaf of the tobacco plant, Nicotiana Tabacum, termed as Tamraparn in Ayurveda. The active principals of this plant are toxic alkaloids. **Nicotine**, is the principal [alkaloid](https://www.britannica.com/science/alkaloid) of [tobacco](https://www.britannica.com/plant/common-tobacco). Tobacco is the most widely consumed psychotropic drugs worldwide. Tobacco can be consumed in the forms of smoking, chewing, dipping or sniffing. It is more addictive than cocaine and heroin . Use of tobacco results in emotional dependence and acts as a mood leveler. Tobacco poisoning is caused by absorption either through intact or broken skin, by inhalation, or ingestion. Nicotine first stimulates, then depresses, and later paralyses autonomic ganglia, brain and skeletal muscles. According to Ayurveda the properties of tobacco are akin to poison. The adverse effect or overdosing effect are noted as Madakarit (narcotic), Bhramaka (Induces vertigo), Drishtimandyatwa (blindness). The Circumstances of Poisoning occurs mainly by Accidental poisoning. Suicidal and homicidal poisoning is rare. Tobacco slowly block personal, economic, and social development. We have to get rid of the bad habit gradually in quarters rather than stopping the habit abruptly. In An organized plan for de-addiction includes three phases Assessment, Intervention and Follow up. It is the duty of every Physician, National authorities and a responsible citizen to create awareness about the harmful effects of tobacco consumption.

**Key words:** Tobacco Consumption, Poisoning ,Addiction, De-Addiction

**Introduction:**

**Latine name** : Nicotiana tabacum

**Family** :  [Solanaceae](http://en.wikipedia.org/wiki/Solanaceae).

**Vernacular name:**

Sanskrit : Tamraparn

Hindi : Tamaku

English : Tobacco

**Classification:**

Ayurveda : Vanaspatij (Sthavara) visha [1]

Modern : Cardiac Poison [2]

**Description of Plant:**

**Tobacco Plant**

Tobacco grown all over India but the plant is native of America. Nicotina tabacum and Nicotina rustica are two main verities commonly cultivated for producing commercial tobacco. Nicotina rustica (strong tobacco)- is a very potent variety of tobacco containing upto nine times nicotine than common species of N. tabacum. The high concentration of Nicotine in its leaves makes it useful for producing pesticides it is less cultivated. Nicotina tabacum- is widely cultivated in India in most countries of the world. It is a plant cultivated in the plains of India having less rainfall and temperate climate. It is a small plant with weak stem and large leaf. When dried it turn to golden brown color and hence the name Tamraparna. The leaf is dried and used as tobacco in many product by the purpose of intoxication and therapeutic use.[3,4]

**Active principles** – Nicotin, Anabasin, Nornicotine

Plant contain active principals are toxic alkaloids. Nicotine and Anabasin are equally toxic, Nornicotine is less toxic . All part of plant expect the ripe seeds contain the alkaloid as the active principal maximum concentration is in leaves.

**Nicotine**, an [organic compound](https://www.britannica.com/science/organic-compound)  is the principal [alkaloid](https://www.britannica.com/science/alkaloid) of [tobacco](https://www.britannica.com/plant/common-tobacco). Nicotine is colorless, volatile, bitter, hygroscopic oily, natural liquid alkaloid. **Nicotine** very toxic and exists in all parts of the tobacco plant, especially in the leaves turning brown and resinous on exposure to air has a burning acrid taste and a penetrating disagreeable odor. Nicotine is used extensively in agricultural and horticultural work as fertilizers, fumigants, and insecticide sprays. [5,6]

**Intoxication:**

Tobacco (Tambhakhu) is the leaf of the tobacco plant, Nicotiana tabacum. The dried leaves are chewed or used in the form of smoke or snuff. [7] Tobacco can be consumed in the forms of smoking, chewing, dipping or sniffing. Many people use smokeless tobacco products, such as snuff and chewing tobacco in the form of Gutkha, Khaini, Mawa, Pan masala etc. Cigarette smoking is the most popular method of using tobacco which contains more than 4000 toxic chemicals & 60 carcinogens. WHO also stated that there are approximately 1.1 billion regular smokers in the world, one-third of the global population aged 15 years and older. [8,9] **It is** more addictive than cocaine and heroin . First stimulates and then represses the vagal and autonomic ganglia and the cerebral and spinal centers. Use results in emotional dependence mood leveler. Users rely on it to control emotional responses to everyday life [10,11]

**Types of abuse:**

**Chewing and snuff-** The use of tobacco products like pan,gutka,mava increases plasma nicotine level,

and increases the chances of oral cancer, gingitivitis, discoloration, decaying, loss of teeth and sub mucosal fibrosis.

**Smoking-** Biddi, Cigarette, cigars, pipes, hookkha etc are the different mode of smoking. The catastrophe seem to be equal for all these types of smoking.

**Poisoning by tobacco:**

Poisoning is caused by absorption either through intact or broken skin, by inhalation, or ingestion. Nicotine first stimulates, then depresses, and later paralyses autonomic ganglia, brain specially mid brain and it paralysed the skeletal muscles including the diaphragm. It affects the heart, liver and lungs and leads to heart attacks, strokes, chronic obstructive pulmonary disease, hypertension and cancer. The stages of these diseases in a man depend on the quantity and time period of tobacco consumption. **Secondhand or passive smoke** also causes dangerous adverse health effects in human beings . It causes lung cancer, heart problems, eye infections and skin disorders in human. In fact, tobacco is important cause of premature death worldwide mostly in developed countries.

**Maternal Smoking leads to**: Increased risk of spontaneous abortion. Fetal death. Increased risk of placenta previa. Low birth weight of baby.[12,13,14]

The consumption of tobacco in all forms including secondhand or passive smoke is the single greatest cause of preventable death globally. The tobacco epidemic is one of the biggest public health threats the world has ever faced, killing more than 8 million people a year, which is expected to rise to 10 million per year by 2030. More than 7 million of those deaths are the result of direct tobacco use including around 1.2 million non-smokers being exposed to second –hand smoke deaths from exposure to second-hand smoke.[15,16,17]

**Ayurveda Concept:**

According to **Ayurveda** the properties of tobacco are akin to those of poison. Tobacco is a Sthavara, Pa-tra Visha.It is not mentioned in Samhitas. It was introduced by Bhavprakasha Nighantu andby Acharya Yogratnakara. They explained Tobacco’s therapeutic as well as toxic action in their text. When it is taken in excess amount it produces various hazard effect like intoxication, giddiness, vomiting, Pittaag-gravation and purgation, diminishes shukra. It’s Tik-shna and Pittavardhaka properties are responsible for Mukhapaak (Sarvsar Roga) which are identified with mouth ulcer, redness and erosion of buccal mucosa, burning sensation of oral mucosa. Being hot it vitiates Pitta, and Rakta.

Sharpness of tobacco impairs the intellect (Buddhi),Lightness of the drug poses difficulties in treatment of its Poisoning. The drug spreads quickly all over the body, (Vyavayi ) and adversely affect the constituents of body i.e. humors (Dosha),tissues (Dhaatu) and wastes (Mala) due to its Vikashee properties. These properties contributed by nicotine are opposite to immunity factors Ojas. The adverse effect or overdosing effect are also noted like Madakarit (narcotic), Bhramaka (Induces vertigo), Drishtimandyatwa(blindness). [18,19,20]

**Signs and Symptoms of poisoning :**

**Mild poisoning** occurs when tobacco is chewed or smoked for the first time or when insecticide spray has been inhaled. Dizziness, nausea, vomiting, headache, perspiration, general weakness, and mild rise in blood pressure with increased pulse rate may occur. These symptoms subside in a few hours.

**Acute poisoning** occurs when nicotine is absorbed in poisonous amounts. There is burning in the mouth, throat, and stomach, followed by rapid progression of symptoms of mild poisoning, passing into prostration, convulsions, respiratory slowing, cardiac irregularity and coma. Death may occur from cardiac arrhythmia, exhaustion, or respiratory failure.

**Chronic poisoning** results from the continued use of tobacco by chewing, smoking or from exposure to nicotine during processing, storage or insecticide spray. Those who chew tobacco suffer from chronic cough, laryngitis, pharyngitis, and bronchitis and those who handle it suffer from dermatitis. In all tobacco stains on teeth, bad odor in breath, angiospasms and muscular tremors may be found. In addition, there may be, blindness, cardiac arrhythmia with extra systole and chest pain suggesting angina pectoris. Occlusive thromboangiitis obliterans is common and an increase in the incidence of cancer of the mouth, tongue, throat, larynx and lungs is common.

**The Circumstances of Poisoning**- Accidental poisoning results due to ingestion, excessive smoking and application of leaves or juice to wound or skin. For malingering tobacco leaves are soaked in water for some hours and placed in axillae at bed time which is held in position by a bandage. When used as germicide or insecticide in agriculture. To infants through breast milk of excessively smoking mothers. In the workers of tobacco factory. Poisonous symptoms are seen the next morning. Suicidal and homicidal poisoning is rare.

**Fatal dose:** 40 to 60 mg. of nicotine.15 to 30 gm of crude tobacco.

**Fatal period:** 5-15 minutes. [21,22,23]

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**Tobacco as addictive:**

It is considered as an intoxicant (Madakari Dravya) as it hinders the normal functions of brain and blocks the intellect (Buddhi).Yogaratnaakara has mentioned its actions like causing intoxication (Mada),giddiness(Bhrama) and increase of Pitta.[24]

**Addiction:**

Addiction is physiological and psychological dependence on a substance or habit that is beyond one’s one control. Nicotine is the most widely consumed psychotropic drugs worldwide. The common use of nicotine increases the risk of non communicable diseases to many folds. It’s a long-term brain disorder that promotes compulsive substance usage despite negative effects. Addiction has a wide-ranging negative impact on humans, as well as social consequences. Sudden withdrawal from any addictive medication might result in psychosomatic illness. [25,26]

Tobacco slowly block personal, economic, and social development. An addicted person engages in a vicious cycle of physical and mental health hazards and may adopt antisocial behavior. Due to the overconsumption of various products containing nicotine such as Tobacco, Gutkha, Kharrha, Khaini, Masala Supari, Jarda, Hookah, Bidi, and Cigarette, people may develop many symptoms. At first, difficulty in deglutition, lockjaw trouble in mouth opening, change in voice, and so on, but pain is totally absent, hence most of the times, these features get neglected. [27.28,29]

Due to its abuse, white patch called as leukoplakia or submucous fibrosis develops. However, if not treated and nicotine products are consumed regularly, then red patch appears called as erythroplakia, which later may turn into blackish one known as melanoplakia. Cancerous, non healing ulcer may appear in the maxilla, mandibular region, or chin and oral cavity.[30,31]

**Submucous Fibrosis**

Tolerance and physical dependence manifested by abstinence mediated withdrawal syndrome contribute to strong control executed by nicotine.

**Withdrawal Symptoms:**

Intense urge to smoke, anxiety ,impaired concentration and memory, depression or hostility, headache, muscle cramps, sleep disturbances, increased appetite and weight gain, diaphoresis and rapid respiration. A short period (6to 12 weeks) of maintenance often followed by gradual reduction in 6 to 12 week is adopted.[32]

**De-addiction :**

Smoking addiction should be viewed as a chronic medical problem requiring commitment and management skills. The principle of management is similar to that in management of incompatible habituation [VIRUDHA SAATMYA] mentioned in Ayurveda. Accordingly we have to get rid of the bad habit gradually in quarters rather than stopping the habit abruptly. In smoking also it can be employed as reducing the frequency, reducing the dose and practicing something favourable to the body to distract the urge for smoking.

An organized plan for de-addiction includes three phases

* Assessment
* Intervention
* Follow up

1) Assessment

Survey about prevalence and searching for the individuals who want intervention for quitting.

2) Intervention

Quitting nicotine addiction can be quite difficult for the addicted. To stop any addiction there should be strong will power. The methods include.

1. Physician's advice and counselling –

* Individual
* Group therapy

2. Behavioral training includes making determination and advising tips like

1. Setting a target date.
2. Avoid drinks containing caffeine as it adds up to the desire for nicotine
3. Involving in other activities that will be helpful distraction from addiction.
4. Exercise to gain more energy and to prevent from putting on more weight
5. Healthy eating with snacks of raw vegetables and plenty of water.
6. Whenever the urge for consuming tobacco is too strong, take a few deep, slow breaths and also stay away from friends who have addiction.
7. Training to wipe out negative feelings and inter personal conflicts.
8. Nicotine replacement therapy likes Nicotine chewing gum and transdermal patches.
9. Yogic respiratory exercises [PRAANAAYAMA]
10. Hypnosis and acupuncture therapy can be applied.

**Ayurveda Management**

1. **Sadvritta** –adopt simple moral principles and the right conducts.
2. **Achara Rasayana**-Achara means behavior and Rasayana means rejuvenation, results in rejuvenation of body and mind,
3. **Satvavajay Chikitsa** - play an important role to prevent Pragyaparadha, Adoption of Ayurveda lifestyle -daily and seasonal regimen,Acharya Charaka recommended few measures to overcome the dependence such as inculcation of morals, habit of doing meditation, taking nutritious diet.
4. **Padanshika Krama**-Charaka has advised to adopt Padanshika Krama, which means small quantity should be reduced to avoid strong withdrawal symptoms. [33,34,35]
5. **Panchakarma** : The Panchakarma measures are also help to eliminate toxins from the body
6. **Medications**: for de-addiction and treatment of withdrawal symptoms following meditation is useful-
* **Herbs :**

Mandukparni (Centella asitica Linn), Bramhi (Bacopa monnieri Linn), Shankhpushpi (Convolvulus Pluricaulis), Guduchi (Tinospora cordifolia), Ashwagandha (Withania Somnifera Linn), Jyotishmati (Celastrus paniculatus), Sarpagandha (Raulfia sarpentina Linn), Shunthi (Zingiber officinale), Ajvain (Trachyspermum ammi), Maricha (Piper nigrum)

* **Ayrveda formulations:**

Agnitundirasa, Yograjguggulu, Hingwashtak Churna Ashvagandha churna, Triphaladi gandusha, Dashmooladi Kwath

**Follow up**

Not as a failure, but as a cyclic process of cessation and giving support to those who had successfully quit.

**To deal with relapses**

Referring to de-addiction centers.

**Prevention:**

Political, social and cultural sources play active role in reducing social acceptability of smoking and increasing the concern about health consequences of active and passive smoking. Physician should initiate and support efforts to increase tobacco excise tax, to eliminate all tobacco advertisements and to ban smoking in public places. Primary smoking prevention program in adolescence will be effective.

**Tobacco advertising :**

Comprehensive bans on tobacco advertising, promotion and sponsorship can reduce tobacco consumption. A comprehensive ban covers both direct and indirect varieties of promotion: **Direct forms** include advertising on television, radio, print publications, billboards and social media platforms. **Indirect forms** include brand sharing, brand stretching, free distribution, price discounts, point of sale product displays, sponsorships and promotional activities

**Taxes:**  Increases in Tobacco taxes are the most cost-effective way to reduce tobacco use

**Quitting tobacco**

When tobacco users become aware of the dangers of tobacco, most want to quit. However, nicotine contained on tobacco products is highly addictive and without cessation support only 4% of users who attempt to quit tobacco use will succeed.It is the duty of Every Physian and responsible citizen to create awareness about the harmful effects of tobacco consumption. Professional support and proven cessation medications can more than double a tobacco user's chance of successful quitting.

**“The annual world no tobacco day campaign (31 May) is an opportunity to raise awareness on the harmful and deadly effects of tobacco use” [**39]

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