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

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**Abstract:**

Tambhakhu (Tobacco) , the leaves of the tobacco plant (Nicotiana Tabacum), termed as Tamraparn in Ayurveda. It contains toxic alkaloids with **Nicotine**, being the principal [alkaloid](https://www.britannica.com/science/alkaloid) . Tobacco is the highly consumed psychotropic drug worldwide. Tobacco can be consumed in the various forms of sniffing, chewing ,smoking,or dipping . It is more addictive than cocaine and heroin and act as mood leveler and results in emotional dependence . Tobacco poisoning can occur 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 tobacco’s properties are similar to poison with adverse effect or overdosing effect are noted as Bhramaka (Induces vertigo), Madakarit (narcotic), Drishtimandyatwa (blindness). The Circumstances of tobacco poisoning mainly occurs through Accidental poisoning while suicidal and homicidal poisoning is rare. Tobacco consumption gradually blokes, economic, personal and social development. In order to quit this habit it is recommended to gradually reduce tobacco use instead of abruptly stopping. 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 destructive 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 is grown all over India but the plant itself is native of America. The two main varities commonly cultivated for commercial tobacco production are Nicotina tabacum and Nicotina rustica. Nicotina rustica (strong tobacco) is particularly a very effective variety of tobacco containing upto nine times the amount of nicotine compared to N. tabacum species. The high Nicotine concentration in its leaves makes it useful for producing pesticides, N. Rustica is less cultivated species. Nicotina tabacum- is widely cultivated in India in many other countries around the world. These plants cultivated particularly in the plains of India having less rainfall and temperate climate. It is a small plant with large leaves and weak. stem. When dried the leaves turn a golden brown color and thus the name Tamraparna. Thease dried leaves are used as tobacco in various product for the purpose of both intoxication and therapeutic use.[3,4]

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

Plant contain active principals are toxic alkaloids. Nicotine and Anabasin being equally toxic, while Nornicotine is less toxic . All part of plant except the ripe seeds contain the alkaloid as the active principal with the highest 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). It is volatile, colorless, bitter, hygroscopic oily, liquid , natural alkaloid. **Nicotine is** highly toxic and is present in all parts of the tobacco plant, particularly in the tobacco leaves which turn brown and resinous upon exposure to air. It has a penetrating disagreeable odor and burning acrid taste. Nicotine is extensively used in horticultural, agricultural work as fertilizers, fumigants, and insecticide sprays. [5,6]

**Intoxication:**

The dried leaves of tobacco plant (Nicotiana tabacum ) consumed as Tobacco (Tambhakhu). Tobacco can be chewed, smoked or used as snuff. [7] It can be consumed in various way such as sniffing, chewing ,smoking,or dipping. Smokeless tobacco products like snuff and chewing tobacco, such as Mawa, Pan masala, Gutkha, Khaini, are popular among many people.

The most common method of using tobacco is cigarette smoking. Cigarette contains 60 carcinogens and more than 4000 toxic chemicals. According to the World Health Organization (WHO), there are around 1.1 billion regular smokers worldwide, representing one-third of the global population aged 15 and above.

 [8,9] Tobacco is highly addictive, more than cocaine and heroin also. It initially stimulates and then suppresses various centers as spinal and the cerebral centre , autonomic ganglia in the body. Users often depend on tobacco to regulate their emotional responses to everyday life.

 It initially stimulates and then suppresses various centre in the body the cerebral and spinal centers and the autonomic ganglia. Continue use consequences in mood leveler and emotional dependence. [10,11]

**Types of abuse:**

**Chewing and snuff- T**he use of tobacco product he like mava, pan masala, gutka, Khaini which increases plasma nicotine level, raises the risk of several oral health issues such as oral cancer, gingitivitis, decaying, discoloration, loss of teeth and sub mucosal fibrosis.

**Smoking-** People smoke using different method likeBiddi, Cigars pipes ,Cigarette, and hookkha. All type of smoking are equally damaging, leading to catastrophic health consequences seem to be equal for all these types of smoking.

**Poisoning by tobacco:**

Poisoning is caused by inhalation, ingestion or by absorption either through intact or broken skin. Tobacco(Nicotine) first stimulates, then depresses, and later paralyses autonomic ganglia, brain specially mid brain and it paralysed the skeletal muscles including the diaphragm. By affecting the liver, heart, lungs and leading to strokes, heart attacks, chronic obstructive pulmonary disease, hypertension and cancer. The effect depends on the time period and the quantity and of tobacco consumption. **Passive or secondhand smoke** causes hazardous bad health effects in human beings leads to heart problems, lung cancer, skin disorders, eye infections. Consumtion of tobacco is vital cause of premature death worldwide frequently in developed countries. **Maternal Smoking** can leads to several sever outcome such as increased risk of spontaneous abortion, Increased risk of placentaprevia, Fetal death, Low birth weight of baby.[12,13,14]

Tobacco use in all forms is responsible for preventable deaths yearly worldwide. The tobacco epidemic is a massive public health threat, leading to more than **eight million** deaths annually. The numbers are expected to continue rising, with **ten million** deaths predicted by 2030, with passive smoke being responsible for a significant number of those deaths. [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 overdosing or adverse effect like Bhramaka (Induces vertigo), Madakarit (narcotic), Drishtimandyatwa (blindness)have also been noted. [18,19,20]

**Signs and Symptoms of poisoning :**

**Mild poisoning** can occur when tobacco is chewed or smoked for the first time, or when there is inhalation of insecticide spray. Symptoms of mild poisoning include nausea, vomiting, dizziness, perspiration, headache, general weakness, and a slight rise in blood pressure with an increased pulse rate. These symptoms typically subside within a few hours.

**Acute poisoning** occurs when there is the absorption of nicotine in poisonous amounts. It is characterized by a burning sensation in the mouth, throat, and stomach which is accompanied by a rapid progression of symptoms seen in mild poisoning. This can lead to convulsions, prostration, irregularities in heart rate, slowing of respiration, and may eventually result in coma. In severe cases death can occur from exhaustion, cardiac arrhythmia, or respiratory failure.

**Chronic poisoning** is the result of continued use of tobacco through chewing, smoking, or exposure to nicotine during processing, storage, or insecticide spray. Individuals who chew tobacco may suffer from chronic cough, laryngitis, pharyngitis, and bronchitis. Those who handle tobacco may experience dermatitis. Common symptoms among tobacco users include bad breath, teeth stains, angiospasm, and muscular tremors. Additionally, there may be complications such as blindness, cardiac arrhythmia with extra systole, chest pain resembling angina pectoris, and an increased risk of developing cancer in the mouth, tongue, throat, larynx, and lungs. Occlusive thromboangiitis obliterans is also common.

**The Circumstances of Poisoning** - **Accidenta**l **poisoning** from tobacco may occur due to excessive smoking, ingestion, or application of leaves or juice to the skin or wounds. Tobacco leaves are sometimes soaked in water and placed in axillae in the bed-time which are then held in position by a bandage and used in cases of malingering. Poisonous symptoms usually become apparent the next morning. Additionally, workers in tobacco factories may also exhibit symptoms of poisoning. Infants of excessively smoking mothers by breast feeding are also at risk of exposure. **Homicidal** and **suicidal** poisoning from tobacco is rare.

The **fatal dose** for nicotine intake is between 40 to 60 milligrams, or 15 to 30 grams of crude tobacco. The **fatal period** after intake is usually between 5 to 15 minutes.

 [21,22,23]

**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]

 Tobacco is known to be an addictive substance because it is classified as an intoxicant (Madakari Dravya) that can hinder normal brain functions and block the intellect (Buddhi). The actions of tobacco, such as causing intoxication (Mada), giddiness (Bhrama), and an increase in Pitta, have been mentioned in the Yogaratnakara.

**Addiction:**

Addiction is characterized by a physiological and psychological habit or dependence on a substance that is beyond control. Worldwidely tobacco is the most extensively consumed psychotropic drug, increases the risk of non-communicable diseases and becomes a long-term brain disorder that promotes compulsive substance use despite its negative effects. The overconsumption of various tobacco products such as Tobacco, Kharrha ,Gutkha,Khaini, Jarda, Masala Supari, Hookaah, Cigarette and Bidi can cause symptoms such as difficulty in swallowing, trouble in mouth opening , lockjaw, and change in voice. However, as pain is often absent, these symptoms may get neglected. [25,26]

 The wide-ranging negative impacts of addiction have serious social consequences and withdrawal from any addictive medication can result in psychosomatic illness. [27,28,29]

Tobacco addiction can block personal, economic, and social development and cause a vicious cycle of physical and mental health hazards, as well as antisocial behavior Prolonged consumption of nicotine products can cause the development of a white patch called Leukoplakia or submucous fibrosis if left untreated with continuing nicotine product consumption, this can develop into a red patch called erythroplakia, which can eventually turn into a blackish patch known as melanoplakia. This can lead to a non-healing ulcer in the maxillary, oral cavity or mandibular region, chin which may become cancerous. [30,31]



**Submucous Fibrosis**

Tolerance and physical dependence developed with nicotine use, leading to withdrawal symptoms when an individual tries to quit or cut down tobacco addiction. These withdrawal symptoms can include:

**Withdrawal Symptoms:**

Strong will to consumption of tobacco, Impaired concentration and Memory, Depression, Headache, Muscle cramps, Sleep disturbances, Anxiety, Diaphoresis (excessive sweating) and Rapid respiration, Increased appetite and Weight gain. To help individuals quit smoking, a common approach is to undergo a short period of maintenance, typically lasting 6 to 12 weeks, followed by a gradual reduction in smoking over the next 6 to 12 weeks. This method helps manage withdrawal symptoms and increase the chances of successfully quitting smoking. [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 favorable to the body to distract the urge for consumtion of tobacco.

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**

a. **Sadvritta**: This involves adopting simple moral principles and right conduct. By practicing good behavior, individuals can maintain a balanced and healthy lifestyle.

b**. Achara Rasayana**: Achara refers to behavior and Rasayana means rejuvenation. The combination of these two concepts results in the rejuvenation of both the body and mind. It emphasizes following positive behavioral patterns to promote overall wellness.

c. **Satvavajay Chikitsa**: This form of treatment plays a vital role in preventing Pragyaparadha, which refers to errors in perception.

By adopting an Ayurvedic lifestyle, which includes following daily and seasonal regimens, individuals can promote mental well-being. Acharya Charaka recommended measures such as inculcating morals, practicing meditation, and consuming a nutritious diet to overcome dependency.

d. **Padanshika Krama**: Charaka recommended adopting Padanshika Krama, which involves gradually reducing the quantity of addictive substances to avoid strong withdrawal symptoms.

e. **Panchakarma**: Panchakarma is a set of therapeutic measures in Ayurveda that help eliminate toxins from the body. These measures can be beneficial in the treatment of addiction.

f. **Medications**: Alongside lifestyle and therapeutic measures, there are certain herbal remedies that can aid in **de-addiction** and the treatment of **withdrawal symptoms.**

**Herbs :**

Mandukparni (Centella asitica Linn), Bramhi (Bacopa monnieri Linn), Ashwagandha (Withania Somnifera Linn), Shankhpushpi (Convolvulus Pluricaulis), Guduchi (Tinospora cordifolia), 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:**

Social, political, 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 advocate for increasing tobacco excise tax, eliminating all tobacco advertisements and banning smoking in public places. Implementing primary smoking prevention programs in adolescents can be effective.

**Tobacco advertising :**

Comprehensive bans on tobacco promotion, advertising, and sponsorship can decrease tobacco consumption. A comprehensive ban covers both direct and indirect forms of promotion.

**Direct forms-** comprise advertising on radio television, print publications and social media platforms.

**Indirect forms-** include brand stretching, brand sharing, price discounts, free distribution, point of sale product displays, sponsorships and promotional activities

**Taxes:**  The most cost-effective way to reduce tobacco consumption is increasing the taxes on tobacco

**Quitting tobacco**

When tobacco users become conscious of the harmful effects of tobacco consumption, they may want to quit. However, nicotine found in tobacco products is highly addictive and only 4% of consumers of tobacco who attempt to quit tobacco use will succeed, without cessation support. It is the duty of every Physician 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 consumer’s chance of successfully quitting.

**“Campaign on World No Tobacco Day 31 May celebrated annually - is an opportunity to raise awareness on the harmful and deadly effects of Tobacco”** [39]

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