



Nicotine Addiction Treatment

For Prelims: [Nicotine](#), Nicotine Replacement Therapy, National Tobacco Control Programme

For Mains: Nicotine Addiction and Burden on Public Health, Government policies and interventions

Source: [TH](#)

Why in News?

In a recent study set to redefine [nicotine addiction treatment](#), researchers have unveiled a breakthrough method leveraging **Vitamin C and cotinine**, a nicotine metabolite.

- This approach goes beyond conventional **Nicotine Replacement Therapy (NRT)**.

Note

- **Nicotine** is a plant alkaloid that contains nitrogen, which is found in several types of plants, including the tobacco plant and can also be produced synthetically.
- Nicotine is both a sedative and a stimulant. It is the main psychoactive ingredient in tobacco products.
- Cotinine is formed as a major metabolite of nicotine after tobacco smoking.

What are the Key Highlights of the Study?

- **Utilizing Cotinine:**
 - Current NRT relies on providing **additional nicotine** to the body through patches or lozenges (medicinal tablets).
 - Individuals find it challenging to quit smoking due to nicotine withdrawal, which manifests as **cravings, irritability, anxiety, increased appetite**, and difficulty concentrating.
 - Researchers explore **cotinine, nicotine's oxidative metabolite**, as an alternative approach.
 - In humans, generally, **80% of nicotine accumulates as cotinine** in the body, while the **remaining 20% is eliminated in urine**. Cotinine can cause cancer.
 - Researchers used **Ascorbic acid (Vitamin C)** as a reducing agent to **convert cotinine back to nicotine** which is **recirculated in blood** to prevent the **nicotine urge**.
 - Researchers made a **dissolvable** film with Vitamin C for smokers to use when tempted to smoke.
 - Ascorbic acid in the specified dose facilitates the conversion of cotinine to nicotine within the **smokers' plasma (liquid portion of blood)**.

▪ **Results:**

- Vitamin C helps turn cotinine into nicotine without **side effects**. The body gets **rid of toxins** at the end without needing extra nicotine.

▪ **Future Considerations and Study Requirements:**

- The converted nicotine, as indicated by the study, may be recirculated to induce **Central Nervous System (CNS)** effects, potentially aiding in the treatment of nicotine withdrawal.
- The research team acknowledges the need for further studies with larger samples to validate their findings.

Nicotine Replacement Therapy (NRT)

- It is a treatment to help people stop smoking. It uses products that supply **low doses of nicotine**.
 - These products do not contain the other **toxins found in smoke**. The goal of therapy is to **cut down on cravings for nicotine** and ease the symptoms of nicotine withdrawal.
- NRT products come in several forms, including Gum, Transdermal patches, Nasal sprays, Oral inhalers, and Tablets.

What is the Status of Tobacco Consumption in India?

- Nearly **267 million adults (15 years and above) in India (29% of all adults)** are users of tobacco, according to the **Global Adult Tobacco Survey India, 2016-17**.
 - The most prevalent form of tobacco use in India is smokeless tobacco and commonly used products are **khaini, gutkha, betel quid with tobacco and zarda**.
 - Smoking forms of tobacco used are bidi, cigarette and hookah.
- Tobacco use is a major risk factor for many chronic diseases, including cancer, lung disease, cardiovascular disease and stroke.
 - It is one of the major causes of death and disease in **India and accounts for nearly 1.35 million deaths every year**.
 - India is also the second largest consumer and producer of tobacco. A variety of tobacco products are available at very low prices in the country.
- The total **economic costs** attributed to tobacco use from all diseases in India in the year 2017-18 for persons aged 35 years and above amounted to **USD 27.5 billion**.

What are the Government Initiatives Related to Tobacco Consumption?

- **Cigarettes and Other Tobacco Products (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution) Act(COTPA), 2003:**
 - The Act applies to all tobacco-containing products outlined in the Act's Schedule. Prohibits advertising and regulates trade, commerce, production, supply, and distribution of cigarettes and other tobacco products in India.
- **National Tobacco Control Programme(NTCP):**
 - It was launched in the year 2007-08 during the **11th five-year plan**, to create awareness about the **harmful** effects of tobacco consumption, reduce the production and supply of tobacco products, ensure effective implementation of the provisions under COTPA 2003, help the people quit tobacco use, and facilitate implementation of strategies for prevention and control of tobacco advocated by **WHO Framework Convention of Tobacco Control**.
- **National Tobacco Quitline Services (NTQLS):**
 - The objective of NTQLS is to provide telephone-based information, advice, support, and referrals for tobacco cessation.

UPSC Civil Services Examination Previous Year Question (PYQ)

Prelims

Q. Which of the following are the reasons/factors for exposure to benzene pollution? (2020)

1. Automobile exhaust
2. Tobacco smoke
3. Wood burning
4. Using varnished wooden furniture
5. Using products made of polyurethane

Select the correct answer using the code given below:

- (a)** 1, 2 and 3 only
(b) 2 and 4 only
(c) 1, 3 and 4 only
(d) 1, 2, 3, 4 and 5

Ans: (a)

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