



# SS INSTITUTE OF PHARMACY

(A unit of VS Educational & Charitable Trust)


Approved by Tamilnadu Government & Pharmacy Council of India, New Delhi.  
Affiliated to the Tamilnadu Dr. M.G.R. Medical University,  
and The Directorate of Medical Education, Chennai.

## List of National /International papers published-

### Academic year 2023-2024

S.NO	TITLE OF PAPER	NAME OF AUTHOR/S	DEPARTMENT OF TEACHER	NAME OF JOURNAL	YEAR OF PUBLICATION	ISSN-NO
1	Nicotine Detection Kit	T.Sampath kumar	Pharmacognosy	International Journal of Pharmaceutical science review and research	2023-2024	0976-044X



  
PRINCIPAL,  
SS INSTITUTE OF PHARMACY,  
KUPPANUR (PO), SANKARI (TK),  
SALEM - 637301.



# SS INSTITUTE OF PHARMACY

(A unit of VS Educational & Charitable Trust)

Approved by Tamilnadu Government & Pharmacy Council of India, New Delhi.  
Affiliated to the Tamilnadu Dr. M.G.R. Medical University,  
and The Directorate of Medical Education, Chennai.

Int. J. Pharm. Sci. Rev. Res., ISSN: 0976 – 044X, 84(3) - March 2024; Article No. 23, Pages: 160-165

DOI: 10.47583/ijpsrr.2024.v84i03.023

## Research Article



### Nicotine Detection Kit

Syed Yasin.S.M<sup>\*1</sup>, Sampath Kumar.T<sup>2</sup>, Jothimanivannan.C<sup>3</sup>, Vasanth Raj.S<sup>1</sup>, Shirley Elizabeth.I<sup>1</sup>, Aravind.R<sup>1</sup>

<sup>1</sup>Student, SS Institute of Pharmacy, Sankari, Salem – 637301, India.

<sup>2</sup>Assistant Professor, SS Institute of Pharmacy, Sankari, Salem – 637301, India.

<sup>3</sup>Professor & Principal, SS Institute of Pharmacy, Sankari, Salem – 637301, India.

\*Corresponding author's E-mail: syedyasin674@gmail.com

Received: 10-01-2024; Revised: 26-02-2024; Accepted: 03-03-2024; Published on: 15-03-2024.

#### ABSTRACT

**Aim:** To develop and demonstrate the effectiveness of a Nicotine Detection Kit for detecting nicotine presence in saliva of the tobacco users.

**Method:** We propose a qualitative experiment to demonstrate the presence of nicotine in the saliva of the tobacco users and highlight how it forms compounds with metal. This experiment involves extracting nicotine from tobacco and then creating a reaction between nicotine and Co(II).

**Results:** Our novel kit delivers precise and reliable nicotine detection using saliva, making it a user-friendly, non-invasive tool for tracking nicotine exposure. This advancement holds great promise for applications in healthcare and public health.

**Keywords:** Nicotine, Tobacco users in India, Detection kit, Inexpensive kit, Narcotics detection method.

#### INTRODUCTION

Nicotine is naturally found in the plants belonging to the Solanaceae family (Tobacco, tomato, potato). The majority of tobacco users are addicted to nicotine delivered by tobacco product. Nicotine is a stimulant drug that acts as an agonist at nicotinic acetylcholine receptors. Nicotine consumed with tobacco (various form like smoking and non-smoking form) is probably the second most used drug in the world after caffeine from coffee and tea<sup>1</sup>. All forms of tobacco carry the same level of harm. Tobacco or nicotine consumption is a common practice observed in numerous countries, cultures, and diverse religious traditions worldwide. Cigarette smoking is the most common form of tobacco use worldwide. Other tobacco products include waterpipe tobacco, cigars, cigarillos, heated tobacco, roll-your-own tobacco, pipe tobacco, bidis and kreteks, and smokeless tobacco products. Nearly 2.5 million were nonsmokers who died from heart disease or lung cancer caused by exposure to second hand smoke<sup>1</sup>. Nicotine is widely recognized for its substantial systemic impact, and its potent addictive qualities are just one facet of its influence. This compound exerts detrimental effects on various bodily systems, including the cardiovascular, reproductive, pulmonary, and renal systems, among others.

Nicotine is an unusual alkaloid in that it has two nitrogen-containing heterocycles, pyridine and pyrrolidine. It is, of course, the tobacco component that makes smoking highly addictive, leading to the consequence that long-term smoking causes cancer


Nicotine appears as a colorless to light yellow or brown liquid. Combustible. Toxic by inhalation and by skin absorption. Produces toxic oxides of nitrogen during

combustion. Nicotine is primarily metabolized in the body by the cytochrome P450 (CYP) enzyme family, specifically the CYP2A6 isoform. This enzyme converts nicotine into cotinine, and further metabolizes cotinine into trans-3'-hydroxycotinine. Other metabolites of nicotine include cotinine-N-oxide, norcotinine, norcotinine, 4-oxo-4-(3-pyridyl)-butanoic acid, 4-hydroxy-4-(3-pyridyl)-butanoic acid, and nicotine-N'-oxide<sup>6</sup>.

#### Statistics data about tobacco user (worldwide)

Tobacco kills more than 8 million people each year, including 1.3 million non-smokers who are exposed to second-hand smoke. In 2020, 22.3% of the world's population used tobacco: 36.7% of men and 7.8% of women. More than 80% of all smokers now live in countries with low or middle incomes. China produced and consumed more than 30% of the cigarettes in the world. In many developing countries, tobacco use is notably prevalent. For instance, China stands out with a striking contrast in smoking prevalence between genders, as 74% of males are smokers, while only 8% of females use tobacco. Every day, almost 2,500 children under 18 years of age try their first cigarette, and more than 400 of them will become new, regular daily smokers<sup>2</sup>. Individuals who initiate smoking during their formative years face a higher risk of developing a strong nicotine addiction compared to those who commence smoking later in life. Since 2014, electronic cigarettes (e-cigarettes) have consistently held the title of the most frequently used tobacco product among young people (below age 22). Nicotine pouch sales have seen a rapid increase in the U.S.



  
**PRINCIPAL,**  
**SS INSTITUTE OF PHARMACY,**  
**KUPPANUR (PO), SANKARI (TK),**  
**SALEM - 637301**

NH-544, Kuppanur (Po), Sankari (Tk), Salem(Dt) – 637301, Tamilnadu, India

Phone : 04283 241080 | E-mail : [ssip1718@gmail.com](mailto:ssip1718@gmail.com) | Website : [www.ssip.edu.in](http://www.ssip.edu.in)