

ORAL NICOTINE POUCHES

Contents & Health Effects

What are Oral Nicotine Pouches?

Oral nicotine pouches are small fibre pouches containing nicotine, flavorings, and other chemicals. These pouches are placed between the lips and the gums and release nicotine into the bloodstream

Contents

Nicotine salts

- Oral nicotine pouches contain nicotine salts. Nicotine salts are formed when nicotine is combined with an acid. This is done to lower the pH and allow for higher nicotine concentrations
- Nicotine salts are more potent and absorb faster than free-based nicotine, which is the pure form of nicotine

Tobacco Specific Nitrosamines

- Many oral nicotine pouches contain highly carcinogenic (cancer causing) amines like nitrosamine ketone (NNK) and N-nitrosonornicotine (NNN)

Flavours

- Oral nicotine pouches are produced in a variety of sweet, mint, and fruity flavours
- As of 2024, Health Canada only permits mint and menthol flavoured oral nicotine pouches
- Oral nicotine pouches that claim to be unflavoured often still contain sweeteners and cooling agents to improve palatability and addictiveness

Other chemicals

- In a study of 50 oral nicotine pouches, nearly 200 different chemicals were found, many of which were not listed on the ingredients label. Some were not approved for human consumption

What are tobacco-free oral nicotine pouches?

Tobacco-free oral nicotine pouches contain synthetic nicotine that was made in a lab instead of being sourced from the tobacco plant

**Tobacco-free
≠
Nicotine-free**

Is synthetic nicotine safer than nicotine derived from tobacco?

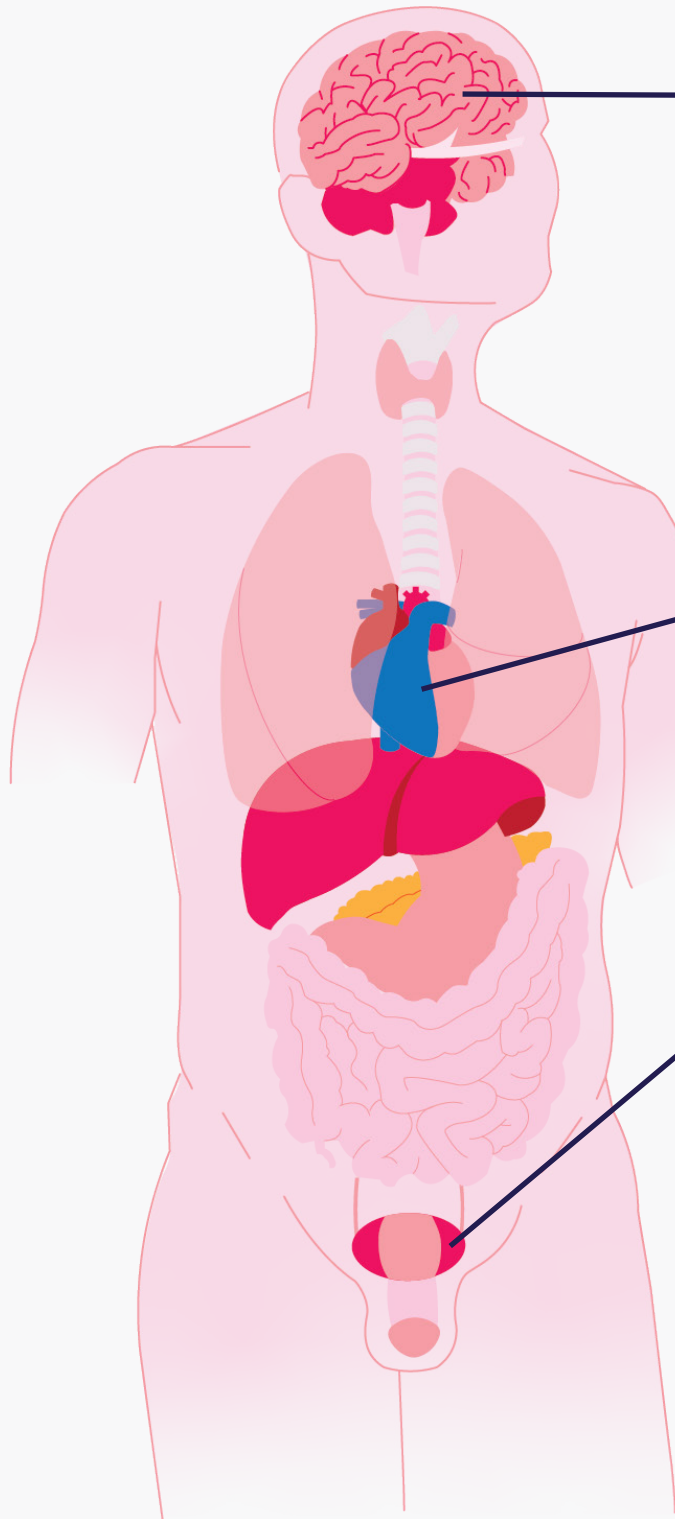
Synthetic nicotine and tobacco derived nicotine contain the same chemical structure and therefore, the same addictive and harmful effects

Is nicotine poisoning possible when using oral nicotine pouches?

It is possible to overdose on oral nicotine pouches. Using large amounts of nicotine in a short time can lead to nicotine poisoning, which is life threatening

How can Quitting Nicotine Improve your Health?

Avoiding oral nicotine pouch usage can prevent the following health issues:



Reduced risk for severe head injuries and improved concussion recovery

Improved short term and long term memory

Better decision making, impulse control, and coordination

Decreased heart rate and blood pressure

Decreased risk of heart disease and death

Decreased risk of erectile dysfunction

Better quality sperm and eggs

How do oral nicotine pouches affect overall health?

Oral nicotine pouches have significant impacts on the health of users' mouths, heart, and blood vessels. Avoiding the use of oral nicotine pouches, as well as other forms of nicotine, is a powerful way to improve overall health!

How do Oral Nicotine Pouches Affect Oral Health?

Avoiding oral nicotine pouch usage can prevent the following oral health issues:

Blisters and skin changes where the pouch is held in the mouth



Gum recession that may lead to cavities and gum disease



Dry mouth that can lead to chronic infections and disorders of the mouth and voice



Chronic inflammation and irritation of the gums that can increase the risk of oral cancers



Harmful mouth bacteria which can increase the risk of esophageal cancers



How do Oral Nicotine Pouches Compare to Traditional Nicotine Replacement Therapies?

	Nicotine Replacement Therapy	Oral Nicotine Pouches
Nicotine Source	Free-based nicotine (lower nicotine)	Nicotine salts (higher nicotine)
Flavours	Unflavored or mint	Sweet, mint, and fruity flavours
Risks	Contain health regulated content	Contain unregulated chemicals that increase health risks

Acknowledgments

Dr. Laura Struik , PhD, RN

Bethany McKenna Stidolph, BHSc, UBC Medical Student

Jared Guspodarchuk, BSP, ACPR

Bob Der, BScPharm

Aldricia Chong, Junior Graphic Designer

References

Dowd, A. N., Thrul, J., Czaplicki, L., Kennedy, R. D., Moran, M. B., & Spindle, T. R. (2024). A cross-sectional survey on oral nicotine pouches: Characterizing use-motives, topography, dependence levels, and adverse events. *Nicotine & Tobacco Research*, 26(2), 245-249. <https://doi.org/10.1093/ntr/ntad179>

Jabba, S. V., Erythropel, H. C., Woodrow, J. G., Anastas, P. T., O'Malley, S., Krishnan-Sarin, S., Zimmerman, J. B., & Jordt, S. E. (2023). Synthetic cooling agent in oral nicotine pouch products marketed as 'Flavour-ban approved'. *Tobacco Control*, 34(1), 106-110. <https://doi.org/10.1136/tc-2023-058035>

Kent, J. T., Mok, G., & Austin, E. (2024). Nicotine toxicity from repeat use of nicotine pouches. *Nicotine & Tobacco Research*, <https://doi.org/10.1093/ntr/ntae111>

Mallock, N., Schulz, T., Malke, S., Dreiack, N., Laux, P., & Luch, A. (2024). Levels of nicotine and tobacco-specific nitrosamines in oral nicotine pouches. *Tobacco Control*, 33(2), 193-199. <https://doi.org/10.1136/tc-2022-057280>

Mallock-Ohnesorg, N., Rabenstein, A., Stoll, Y., Gertzen, M., Rieder, B., Malke, S., Burgmann, N., Laux, P., Pieper, E., Schulz, T., Franzen, K., Luch, A., & R  ther, T. (2024). Small pouches, but high nicotine doses-nicotine delivery and acute effects after use of tobacco-free nicotine pouches. *Frontiers in Pharmacology*, 15, 1392027-1392027. <https://doi.org/10.3389/fphar.2024.1392027>

Mallock-Ohnesorg, N., Rinaldi, S., Malke, S., Dreiack, N., Pieper, E., Laux, P., Schulz, T., Zimmermann, R., & Luch, A. (2023). Oral nicotine pouches with an aftertaste? part 1: Screening and initial toxicological assessment of flavorings and other ingredients. *Archives of Toxicology*, 97(9), 2357-2369. <https://doi.org/10.1007/s00204-023-03538-9>

Miluna-Meldere, S., Rostoka, D., Broks, R., Viksne, K., Ciematnieks, R., Skadins, I., & Kroica, J. (2024). The effects of nicotine pouches and E-cigarettes on oral microbes: A pilot study. *Microorganisms (Basel)*, 12(8), 1514. <https://doi.org/10.3390/microorganisms12081514>

Miluna-Meldere, S., Vanka, S. A., Skadins, I., Kroica, J., Sperga, M., & Rostoka, D. (2024). Oral mucosal changes caused by nicotine pouches: Case series. *Diagnostic Pathology*, 19(1), 127-10. <https://doi.org/10.1186/s13000-024-01549-3>

Rinaldi, S., Pieper, E., Schulz, T., Zimmermann, R., Luch, A., Laux, P., & Mallock-Ohnesorg, N. (2023). Oral nicotine pouches with an aftertaste? part 2: In vitro toxicity in human gingival fibroblasts. *Archives of Toxicology*, 97(9), 2343-2356. <https://doi.org/10.1007/s00204-023-03554-9>

Stanfill, S., Tran, H., Tyx, R., Fernandez, C., Zhu, W., Marynak, K., King, B., Valentín-Blasini, L., Blount, B. C., & Watson, C. (2021). Characterization of total and unprotonated (free) nicotine content of nicotine pouch products. *Nicotine & Tobacco Research*, 23(9), 1590-1596. <https://doi.org/10.1093/ntr/ntab030>

Tran, H., Tyx, R. E., Valentin, L., Mahoney, M., Stanfill, S., & Watson, C. H. (2024). Total and unprotonated (freebase) nicotine content in new types of oral 'tobacco-free' nicotine products. *Tobacco Control*, , tc-2024-058914. <https://doi.org/10.1136/tc-2024-058914>

