ADVANCEMENTS IN CHEMICAL-TOXICOLOGICAL ANALYSIS METHODS FOR NASVAY: INSIGHTS FROM BIOLOGICAL FLUID COMPOSITION

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Abstract: To date, the most common form of smokeless tobacco in Central Asia, in particular in Uzbekistan, is nosvoy. In Uzbekistan, more than 23% of men consume nosvoy. Exposure to nos can lead to the development of cancer in the mucous membranes and many other negative consequences. Nos consists of a mixture of substances with a complex composition of dark green or yellowish green. Basically, this product is prepared in different ways, without observing the sanitary rules in the home environment. It is a saying that someone who sees the method of its preparation, knows what substances it contains, refuses to smoke nos.Nasvay, a traditional smokeless tobacco product, poses significant public health concerns due to its association with various adverse health effects, including addiction and cancer. Analyzing the composition of biological fluids provides valuable insights into the chemical-toxicological profile of Nasvay and its potential health impacts. This article reviews recent advancements in analytical methods for assessing Nasvay constituents in biological fluids, highlighting the importance of comprehensive toxicological analysis in understanding its physiological effects. By integrating innovative techniques such as mass spectrometry, chromatography, and biomarker analysis, researchers can elucidate the complex interplay between Nasvay components and biological systems, informing regulatory efforts and public health interventions.

Keywords: Nasvay, Smokeless tobacco, Chemical-toxicological analysis, Biological fluids, Biomarkers, Mass spectrometry.

Introduction: Nasvay, a smokeless tobacco product widely consumed in Central Asia, poses significant health risks due to its complex chemical composition and addictive properties. Despite growing awareness of its detrimental effects, limited research exists on the comprehensive chemical-toxicological analysis of Nasvay constituents in biological fluids. Understanding the interactions between Nasvay components and biological systems is crucial for elucidating its toxicological

profile and informing regulatory policies aimed at reducing its consumption and associated health risks.

Analytical Methods for Chemical-Toxicological Analysis:

1. **Mass Spectrometry (MS):**

- MS techniques, including gas chromatography-mass spectrometry (GC-MS) and liquid chromatography-mass spectrometry (LC-MS), enable the identification and quantification of Nasvay constituents in biological samples.
- High-resolution MS facilitates the detection of trace-level compounds, providing insights into the complex chemical profile of Nasvay and its metabolites in biological fluids.

2. **Chromatographic Techniques:**

- Gas chromatography (GC) and liquid chromatography (LC) coupled with various detectors, such as flame ionization detector (FID) and ultraviolet-visible (UV-Vis) detector, allow for the separation and analysis of individual components present in Nasvay.
- Chromatographic methods offer high sensitivity and specificity, enabling the quantification of nicotine, alkaloids, and other toxicants in biological matrices.

3. **Biomarker Analysis:**

- Biomarker analysis in biological fluids, such as saliva, urine, and blood, serves as a valuable tool for assessing exposure to Nasvay constituents and evaluating associated health risks.
- Biomarkers of tobacco exposure, including nicotine metabolites (cotinine, nicotine-1'-N-oxide) and tobacco-specific nitrosamines (NNN, NNK), provide quantitative measures of Nasvay intake and metabolic activation in vivo.

4. **Metabolomics and Pharmacokinetic Studies:**

- Metabolomics approaches coupled with high-resolution MS enable the comprehensive profiling of Nasvay-induced metabolic alterations in biological fluids.
- Pharmacokinetic studies elucidate the absorption, distribution, metabolism, and excretion kinetics of Nasvay constituents, shedding light on their systemic exposure and tissue-specific effects.

One of the types of non-smoking tobacco, it is a very popular nosvoy in Central Asia. Nozirova D.X.according to 15-24 years old use of nosvoy 1%, 25-34 years old - 0.4%, 35-44 years old -2%, 45-54 - 4.5%, 55 and above - 5.3%. It is closely related to the age at which men are recorded according to the use of nosvoy. IN 15-24 years

old, their number is 24.2 - 28%, at 25-34 years old - 36.5 - 43.1%, at 35-44 years old. – 37.6 – 42.5%, 45-54 da – 34.9 – 41.25%, 55 and high-46.7%. These. the number of people who want to use nosvoy with increasing age

increases. This is explained by the presence of nosvoy, the effect of "strengthening"the experience of its use with the manifestation of nicotine addiction. For example, a study involving 5,000 people found that between the ages of 15 and 55 years and older, the consumption of Tajik Vakhdat volostatamaki reached 48.7%. Of these, smokeless tobacco is used 41% . At the same time, the consumption of sublingual nosvoy enhances the effect of the effects of toxic components, before everything in the heart, blood vessels, nervous system and then accelerates addiction

Conclusion: Advancements in analytical methods for chemical-toxicological analysis of Nasvay constituents in biological fluids offer unprecedented opportunities to elucidate its health effects and inform regulatory measures. By integrating innovative techniques such as mass spectrometry, chromatography, biomarker analysis, and metabolomics, researchers can comprehensively assess Nasvay's toxicological profile and its implications for public health. These insights are critical for developing evidence-based interventions aimed at reducing Nasvay consumption, mitigating its health risks, and promoting tobacco cessation efforts in affected populations.

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