Substance Information Document

Sugar: sucrose

1. Substance identity

Name	Sugar: sucrose
Synonyms	Saccharose Table sugar Alpha-D-Glucopyranosyl beta-D-fructofuranoside
IUPAC Name	(2R,3R,4S,5S,6R)-2-[(2S,3S,4S,5R)-3,4-dihydroxy-2,5-bis(hydroxymethyl)oxolan-2-yl]oxy-6-(hydroxymethyl)oxane-3,4,5-triol
CAS	57-50-1

2. Toxicological information

Sucrose is found in foods, and the daily exposure from that food use would result in a much larger systemic dose than that resulting from use in tobacco products.

The genotoxicity of a number of the monosaccharides and disaccharides has been evaluated in in vitro and in vivo studies. The results of these studies are overwhelmingly negative. In more details, sucrose failed to elicit genotoxic responses in most in vitro test systems, such as in the bacterial mutagenicity test and the mouse lymphoma thymidine kinase assay.

Sucrose did not elicit toxicity to the rabbit cornea when applied for 3 to 7 hours in neutral aqueous solution. Sucrose did also not produce significant skin irritation on intact or abraded rabbit or guinea pig skin.

The acute LD50 for oral uptake of sucrose was determined at 30 and 35 g/kg for the female and male rat, respectively.

JECFA	-
FEMA	-
EFSA	Scientific Opinion on the evaluation of the substances currently on the list in the annex to Commission Directive 96/3/EC as acceptable previous cargoes for edible fats and oils – Part II of III (wiley.com)
ECHA – REACH dossier	No registration dossier
PUBCHEM	Sucrose | C12H22O11 - PubChem (nih.gov)
CIR	Safety Assessment of Monosaccharides, Disaccharides, and Related Ingredients as Used in Cosmetics (personalcarecouncil.org)
OSHA	SIDS INITIAL ASSESSMENT PROFILE – sucrose, pure

3. Addictiveness and attractiveness

Many types of sugars are added, rather frequently and in relatively high amounts. Sugars are added as flavour or casing to tobacco.

Regarding attractiveness, the addition of sugars to tobacco was suggested to increase attractiveness by reducing the harshness of tobacco smoke caused by volatile basic components, such as ammonia, nicotine, and other tobacco alkaloids. This is because upon cigarette smoking, sugars produce acids that reduce the pH of the inhaled smoke. In addition, the caramel flavours and the brown-coloured Maillard reaction products generated through the combustion of sugars in tobacco improve the taste and smell of tobacco products. More data are needed on the amount of sugars that impart a noticeable characterizing flavour. Regarding addictiveness data are inconclusive. Sugars in tobacco may act pro addictively because their combustion products such as acetaldehyde and formaldehyde have been suspected of increasing the addictive effect of nicotine. There are some studies indicating that sugars do not contribute to the production of acetaldehyde in mainstream smoke, on a weight-by-weight basis, greater than the overall formation of acetaldehyde from natural tobacco polysaccharides, including cellulose, which are the primary precursor of acetaldehyde in mainstream smoke (Cahours et al., 2012). However, other studies performed in cigarettes with one type of tobacco showed that sugar content is positively correlated with the quantity of aldehydes produced. More research into the pro-addictive effects of sugars is warranted.

SCENIHR	Addictiveness and Attractiveness of Tobacco Additives (europa.eu)
EMA	-
PUBMED	-