

Prune Juice Concentrate

Additives are substances intentionally added to tobacco products by tobacco industry in order to render toxic tobacco products palatable and acceptable to consumers.

Prunes are ripe plums that are dried. Concentrated prune juice is extracted from softened prunes. As a fruit extract, prune juice concentrate is very rich in sugars and is therefore naturally sweet.

General uses

Prune juice concentrate has many uses in the food industry, e.g. as a sweetener, colour and flavour enhancer, a binding agent in cereal bars, and also as a 'humectant' to help keep cakes and cookies moist.

Reported tobacco industry uses

Prune juice concentrate (along with other extracts from either the plum or prune) is reportedly used by tobacco manufacturers to add flavour to the tobacco at different stages of manufacturing. Prune juice concentrate can make up to about 0.5 % of the total weight of the tobacco used in one cigarette.

Harmful health effects

Prune juice concentrate, a fruit extract, is safe for use in food products. However, this does not suggest it is safe when inhaled from smoking cigarettes. Studies have yet to identify the compounds produced from burning prune juice concentrate. However, the high sugar content of the concentrate suggests it is likely to behave in a similar way to sugar additives. This could lead to the formation of chemicals that are well known to cause cancer in humans such as polycyclic aromatic hydrocarbons, and those thought to possibly cause cancer such as acetaldehyde. These compounds have

been classified by the International Agency for Research on Cancer (a leading expert cancer organisation). Other toxic compounds that irritate the airways are also formed (e.g. acrolein or 2-furfural).

The sugars also produce acidic compounds, which make it harder for the nicotine in the cigarette smoke to reach the brain. This forces smokers to inhale deeper and to also consume more cigarettes to get their nicotine fix. Furthermore, the use of prune juice concentrate may be indirectly harmful due to the formation of compounds called aldehydes (e.g. acetaldehyde), which can make cigarettes more addictive by enhancing the addictive potential of nicotine. Aldehydes are very reactive and produce compounds such as the substance harman, which can also enhance addictiveness due to its mood-enhancing effect on the brain.

Prune juice concentrate is used to smoothen and mildly sweeten the smoke. It imparts a sweet taste making the smoke more palatable. The high sugar content of the concentrate provides caramel flavours when burnt that enhance the flavour and attractiveness of smoking. By adding prune juice concentrate to improve the taste of the tobacco, the bitter taste of the smoke is sufficiently masked. Also, the sweet caramel flavours appeals to young people, which can make it easier for them to start smoking.

Prune juice concentrate may also be indirectly harmful by making smoking more pleasurable. This encourages the smoking habit, which could ultimately cause smokers to be exposed to higher levels of the toxic substances in cigarette smoke.

Overall, by adding more desirable flavours such as prune juice concentrate to cigarettes, tobacco manufacturers make it easier for smokers to become addicted.

Additives in tobacco products

e.g. prune juice concentrate



can **increase**

- attractiveness,
- addictiveness and
- toxic emissions

therefore **increase** smokers' exposure to toxic smoke emissions

Increase

- health risk,
- cancer risk,
- morbidity and
- mortality

Lifetime smokers lose an average of 14 years of life

Smokers **die younger**

http://ec.europa.eu/health/tobacco/law/pictorial/index_en.htm

Additives in tobacco products

General information

The tobacco industry is made up of many companies that make and sell different types of tobacco products. Whether it is smoked, chewed, sniffed or inhaled second-hand, the use of these tobacco products can and does cause debilitating and life-threatening diseases, as well as premature death. The cigarette is the single most commonly used tobacco product in the European Union (EU). Most people are aware that smoking cigarettes is harmful, as thousands of compounds are produced and released in the smoke, some of which (hundreds) are toxic. But what people may not be aware of is that most tobacco manufacturers add ingredients other than tobacco to cigarettes that affect the chemical make-up of the smoke. These ingredients are known as tobacco additives and are reportedly used, for example, to:

- give a cigarette a particular flavour;
- control the way the cigarette burns;
- keep the tobacco moist thus preventing it from drying out.

To some people, the reasons for adding these substances to a consumer product may appear perfectly reasonable. They may argue that this is not necessarily a bad thing as it makes for a better consumer experience. However, helping people to better tolerate and enjoy a product like cigarettes, which is well known to be toxic and carcinogenic, is an entirely different issue and a matter of great concern.

Additives can make cigarettes more attractive by disguising some of the undesirable effects of inhaling burnt tobacco. For example, they:

- mask the bitter taste and harsh smell of the smoke that is inhaled;
- make the inhaled smoke milder, reducing the irritation of the airways (which essentially silences any warning that the smoke is dangerous);
- turn the ash and smoke white;
- improve the appearance of cigarettes.

Ultimately, by using additives, tobacco manufacturers encourage cigarette use in people who may otherwise be deterred from smoking due to the unfavourable characteristics of raw tobacco. The more pleasant the cigarette, the easier it is for a

smoker to sustain their habit, and therefore the more likely it is that they could become addicted.

Studies have also shown that burning tobacco additives can result in the formation of harmful compounds. However, it is very difficult to consider the effects of a single additive in isolation due to the overall combined effect of all the chemicals present in the tobacco smoke. Moreover, the burnt derivatives of some additives are also known to indirectly boost the effects of nicotine on the brain (nicotine being the main reason why people become addicted to smoking).

Despite this, the tobacco industry is allowed to use additives and continues to do so, on the basis that they have been considered safe for use in food or cosmetics by relevant regulatory authorities. However, this is not a sufficiently scientific basis upon which to justify their use in tobacco products. This is because people do not generally consume/use these food and cosmetic products in a state where the additives are burnt (from being exposed to very high temperatures) and then inhaled. In food and cosmetic goods, consumers are exposed to these additives in a completely different way to how they would be exposed to them through smoking tobacco products. Therefore, these additives should not be considered to have comparable effects on the body when consumed in this way. Furthermore, the fact that these additives can make tobacco products more attractive and increase their use is particularly concerning given the toxic and addictive nature of tobacco products.

Tobacco manufacturers also market 'natural' or 'clean' cigarettes that reportedly have no chemicals or additives. However, potential consumers of these cigarettes are reminded that there is no such thing as a safe cigarette, because the smoke that is produced still contains carcinogens and other toxic compounds that come from the tobacco itself.

Take home message

Tobacco manufacturers make cigarettes more attractive, which encourages their use, and makes it easier for anyone smoking to become addicted.

© 2012 German Cancer Research Center (DKFZ), Heidelberg, Germany

© Photo: Federal Office of Public Health (FOPH), Switzerland

Author: Dr. Urmila Nair

This fact sheet on the tobacco additive *prune juice concentrate* has been created by the German Cancer Research Center (DKFZ), Heidelberg, Germany. It is part of a series of 14 fact sheets on tobacco additives written in the context of the EU project Public Information Tobacco Control (PITOC). The fact sheets aim to inform the public on the general uses, tobacco industry uses and harmful health effects of selected tobacco additives.



National Institute for Public Health
and the Environment
Ministry of Health, Welfare and Sport



GERMAN
CANCER RESEARCH CENTER
IN THE HELMHOLTZ ASSOCIATION

Seven of these fact sheets have been created by the German Cancer Research Center (DKFZ), Heidelberg, Germany, and seven by the National Institute for Public Health and the Environment (RIVM), Bilthoven, the Netherlands. The introduction (or rather the general information) is a common product. The electronic versions of the fact sheets can be found on the DKFZ website <http://www.dkfz.de/de/tabakkontrolle> (carob, cellulose, guar gum, liquorice, menthol, prune juice and vanillin) and the RIVM website <http://www.tabakinfo.nl> (2-furfural, ammonium compounds, cocoa, glycerol, propylene glycol, sorbitol and sugars; additionally, a fact sheet on the tobacco smoke compound acetaldehyde is available).

This initiative has received funding from the European Union in the framework of the Health Programme.

