



Product Safety Assessment Data Sheet

Introduction

This product safety assessment sets out information about FriPura's cooking oil treatment tablets including details of what they are made from and the safety analysis and testing that has been undertaken to establish their safety.

What are FriPura's cooking oil treatment tablets made from?

Fripura's cooking oil treatment tablets are made from 100% natural ingredients.

A type of limestone, which is carefully selected to have an extremely low iron content, is heated with very pure naturally occurring clays at a very high temperature. The resulting mix is then ground down to a very fine powder and a small amount of ultra-fine sand is added. Pure deionised water is then added and the resulting mix is allowed to set. Once set it is thoroughly dried in ovens until no free water remains.

Focus of Assessment

The Foods Standards Agency advised FriPura in 2014 that FriPura's tablets should be treated for regulatory purposes as being equivalent to a ceramic article in contact with food as FriPura's tablets are not consumed but only have contact with cooking oil and thus are equivalent to, for example, a ceramic cooking pot or mug.

Nonetheless as a prudent and responsible manufacturer, FriPura has assessed two possible risks relating to its tablets:-

Risk 1 – Do FriPura's tablets leach anything out into the cooking oil which could be harmful to human health?

Risk 2 – Do FriPura's tablets affect the frying process in any way that could be harmful to human health?

We set out below how FriPura have assessed these risks.

Risk 1 – Leaching

Three independent laboratories, Staffordshire Scientific Services (a public sector laboratory run by Staffordshire County Council), Intertek (ITS Testing (UK) Limited) and West Yorkshire Analytical Services (a public sector laboratory run by Bradford, Calderdale, Kirklees, Leeds and Wakefield councils) carried out a number of leaching assessments on FriPura's tablets.

All the results were then passed to Bibra Information & Advisory Services Limited, a leading independent food toxicology specialist consulting firm. Bibra were asked to assess the leaching data which FriPura had obtained. Bibra's conclusions can be summarised thus:-

1. With a high degree of confidence none of the assessed elements (cadmium, chromium, lead, manganese, molybdenum, nickel, potassium, silicon and zinc) would pose any significant risks to the health of consumers, even when worst-case assumptions were made about exposure.



2. There was no evidence of leaching of any elements from the tablet in amounts that would raise health concerns for regular consumers of foods fried in oil containing Fripura's tablets.

Risk 2 - Effects on Cooking Oil

How Fripura's Tablets Work and Effect on Cooking Oil

Fripura's tablets work by removing certain breakdown products from cooking oils, as explained below.

As cooking oil is exposed to both the water in food and the oxygen in the air it begins to break down. One of the main types of cooking oil breakdown products are free fatty acids (FFA's).

High concentrations of FFA's in cooking oils have a number of undesirable effects:-

- FFA's impart a rancid flavour to food cooked in the oil.
- FFA's act as surfactants, enabling more oil to get into the food, making it too greasy and increasing its fat content. This surfactant effect also makes the food burn more quickly, leading to the characteristic darker coloured chip, the surface of which is literally partly burnt.
- FFA's accelerate the breakdown of the oil generally, which make it more viscous and less effective at heat transfer.
- FFA's reduce the smoke point of the oil, which makes the cooking environment unpleasant.
- FFA's also reduce the flash point and fire point of the oil, thus making cooking with it more of a fire hazard.

The surfactant properties and rancidity of FFA's in practice limit the life of cooking oils and their concentration in cooking is limited by law in a number of European countries.

Fripura's tablets absorb FFA's and other unwanted breakdown products from the oil.

Safety Assessment of Effect of Fripura's Tablets on Cooking Oil

Fripura's tablets significantly extend the life of the cooking oil. Fripura accordingly engaged the well-known and highly respected independent testing laboratory, Campden BRI, to assess any health risks associated with the use of Fripura's tablets and their extension of the life of cooking oil.

Campden's assessment showed that the use of Fripura's tablets in cooking oil was not associated with any significant increase in any known class of cooking oil breakdown products that could be harmful to health, such as dioxins, furans and polychlorinated biphenyls. None of these compounds were present in concentrations even close to the limits set by the relevant EU regulation¹. Indeed the concentration of many classes of breakdown product was actually reduced when Fripura tablets were used.

In conclusion Campden's assessment showed that there was no evidence that the presence of Fripura's tablets in cooking oil causes any chemical reactions in the cooking oil to take place which might produce harmful byproducts.

¹ EU Council Regulation 1881 of 2006.



Effect on Acrylamides

In April 2002 Swedish researchers shocked the world when they published the results of a study showing very high levels of chemicals called acrylamides in high starch/carbohydrate foods (such as chips and crisps) which had been fried at high temperatures. The Swedish research team showed that levels of acrylamide in such foods were up to 500 times higher than the level allowed in drinking water by the World Health Organisation. The results were of considerable concern because animal studies had shown that high levels of dietary acrylamides cause various types of cancers. Subsequent studies have verified the findings of the Swedish team.

Acrylamides thus represent one of the main health risks associated with eating fried food.

In response to such concerns, in November 2017 the EU Commission passed a new law (the Acrylamide Regulation²) which requires food business operators to take various practical steps to reduce the amount of acrylamide in food. The Acrylamide Regulation came into effect on 11 April 2018. The Acrylamide Regulation imposes various obligations on food businesses to take steps to reduce the amount of acrylamides in fried food.

The independent laboratory test conducted by Campden BRI also showed that Fripura's tablets reduce the level of acrylamides in fried food by more than 13%.

It is well-known that more acrylamides are formed during frying when the cooking oil has a higher total polar content³ and Fripura's tablets reduce the overall total polar content of cooking oil, keeping it in its sweetspot for longer. Using Fripura tablets thus significantly reduces acrylamide levels of fried food.

Fat content of Fried Food

Obesity is now the major cause of preventable disease in most countries exposed to the western diet, which is typically comprises large amounts of both high glycaemic index carbohydrates and fats.

As Fripura's tablets remove surfactants from cooking oil they reduce the amount of cooking oil that is absorbed by the food fried in it. The study conducted by Campden demonstrated that Fripura's tablets reduce the amount of cooking oil in chips by up to 23% as compared to chips cooked in oil with no Fripura tablet present. This significantly reduces the amount of calories in an average portion of chips as typically two thirds of the calories in a portion of chips come from the cooking oil in which the chips are fried.

If someone eats, as many do, one portion of chips every two days for a year they would consume approximately 16,000 calories a year less, which is about 4.6 pounds of extra body fat a year. This reduction in calorie intake would be achieved without any modification to diet.

Trans Fats

The other main health risk from fried food is the presence of trans fats. Many vegetable oils contain high levels of trans fats as they are subject to a manufacturing process called hydrogenation, which

² <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017R2158&qid=1517606340232&from=en>

³ See Deep frying: the role of water from food being fried and acrylamide formation, Oléagineux, Corps Gras, Lipides. Volume 10, Numéro 4, 297-303, JUILLET-AOÛT 2003.



makes them last much longer and improves their stability but produces a type of fat molecule called a trans fat.

Trans fats in the diet are associated with higher levels of LDL ("bad") cholesterol and lower levels of HDL ("good") cholesterol and thus are associated with increased risk of coronary artery disease, heart disease and stroke. For this reason they are banned in some states in the US for example.

Fripura tablets have no effect on trans fats per se but because they reduce the amount of cooking oil absorbed by food they can reduce the amount of harmful trans fats consumed by someone eating food cooked in hydrogenated vegetable oil.

Conclusion

Independent scientific testing has concluded that Fripura's tablets:-

- do not leach anything harmful to human health into cooking oil
- remove break down products from cooking oil which prolong its life
- don't cause the concentration of any harmful chemicals in cooking oil to increase
- reduce the amount of harmful acrylamides in fried food
- reduce the fat content and therefore the calorific value of fried food.

