

## **POSITION STATEMENT**

**November 2015**

### **~PUFA and Aldehydes~**

All fats and oils contain a blend of polyunsaturated, monounsaturated and saturated fatty acids. The predominant fatty acid type is usually used to characterise each particular oil. Olive oil, for example, is rich in monounsaturated fatty acids (76%) and is generally referred to as a 'monounsaturated oil'; traditional sunflower oil is rich in polyunsaturated oil (around 65%) and consequently is referred to as being a 'polyunsaturated oil'.

The predominant fatty acid of an oil determines its suitability for various applications. Oils rich in saturated fat, such as animal fats (tallow, lard, etc) or tropical vegetable oils (palm, coconut) are very stable at high temperatures, and thus have historically been used for deep frying foods. However, being high in saturated fat also means that such oils will tend to raise blood cholesterol levels, in particular LDL ('bad') cholesterol. For this reason, world health organisations do not recommend consumption of these oils, or of foods cooked in these oils.

In contrast, polyunsaturated oils have a beneficial effect on blood cholesterol levels, and are widely accepted and recommended by health authorities worldwide as being preferred over saturated fats. However, polyunsaturated fats are unstable when used for prolonged deep frying, and as such, are not recommended for such applications. Polyunsaturated oils are ideally suited for applications such as margarines, salad dressings and mayonnaise.

Monounsaturated oils such as olive, canola and high oleic sunflower oil tend to have a fatty acid profile midway between saturated fats and polyunsaturated fats, and are able to be used in shallow and deep frying applications, while also conferring a beneficial effect on blood cholesterol levels.

In Australia, traditional canola oil, high oleic canola oil and high oleic sunflower oil are widely used in the commercial deep frying environments (such as restaurants, café, etc) as well as in industrial applications in the cooking of pre-packaged foods, such as crisps and frozen chips. Invariably, a blend of these oils is used to deliver a desired taste and functionality.

The 2014 study by Grootveld et al vindicated the longstanding recommendations of the Australian oilseed industry that oils high in polyunsaturated fats, such as traditional sunflower and corn oil, should not be used for deep frying. This study found that prolonged use of sunflower and corn oil in a deep frying environment (>180°C) caused the oils to break down and result in the formation of aldehydes.

When at high concentrations, aldehydes are undesirable compounds, produced through the oxidation of fatty acids, and are regarded as being detrimental to human health. Grootveld found that the more polyunsaturated the oil, the greater was the production of aldehydes.

Given longstanding industry recommendations to not use polyunsaturated oils for deep frying, the Australian oilseeds industry provides a range of alternative oils suitable for deep frying, such as high oleic sunflower, high oleic canola, palm oil and tallow. Most large commercial and industrial food companies which use deep frying oils will utilise one or a blend of these oil types in their fryers. These oils are low in polyunsaturates and are stable and recommended for deep frying applications. In some applications, cottonseed oil, (around 50% polyunsaturated) may also be used for deep frying.

In the domestic home kitchen, polyunsaturated oils such as sunflower oil are unlikely to be exposed to high temperatures for a prolonged period, (i.e. when used for sauteeing, stir frying, etc) and consequently, there is minimal oxidation of the oil. Consequently, there is also minimal formation of aldehydes from these uses. It is also recommended that oils used for frying in the home be only used once.

In line with advice from the National Health and Medical Research Foundation (NHMRC) and the National Heart Foundation, healthier unsaturated oils (such as canola, sunflower, olive etc) should always be used in place of oils rich in saturated fats, such as butter, coconut and tallow/dripping in all usage applications.

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For further information: Contact the Australian Oilseeds Federation