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SAFE FEED APPLICATION OF DEODISTILLATES

Introduction

Recently, discussions in the Standing Committee on the Food Chain and Animal Health (SCOFCAH) about the revision of the Feed Catalogue have shown that there were questions about the safety of deodistillates from chemical refining. This document provides for the necessary clarification on this and argues that treated deodistillates from chemical refining can be safely applied for feed.

General process description of crushing of oilseeds and refining of oils

Step 1 Crushing

Crushing separates oilseeds, such as soybeans, rape seeds and sunflower seeds into two main streams:

1. Solid material, dry substance, like meals or expellers
2. Crude oil

Step 2 Refining

Crude oil refining entails the removal of gums or crude lecithins and that of free fatty acids (FFA) from the oil to get a neutral taste of the edible oil while maintaining the nutritional value and ensuring the quality and stability of the product.

Degumming is the first step of refining and involves the removal of the gums/crude lecithins from the oil. To that effect, the crude oil is treated with water or food grade acid at a temperature of around 100°C. The hydrated gums are removed at the end of this step or after neutralisation. Gums are a raw material for the production of lecithins.

Chemical refining

Chemical refining is the traditional method of oil refining during which FFA are removed from the oil by means of neutralisation.

a. Neutralisation

During neutralisation, the oil is treated with a food grade alkali solution (caustic soda) that reacts with the FFA to form soap stock. The soap stock -together with the precipitated gums, if still present- are separated from the oil by centrifugation. Typically, soap stocks contain 40% water and 60% fatty matter (FFA, triglycerides). In facilities that both crush oilseeds and refine the seed oils (integrated crushing and refining), the soap and gums can be added back to the meal or expellers at inclusion levels of around 1.5% (see attached figure).

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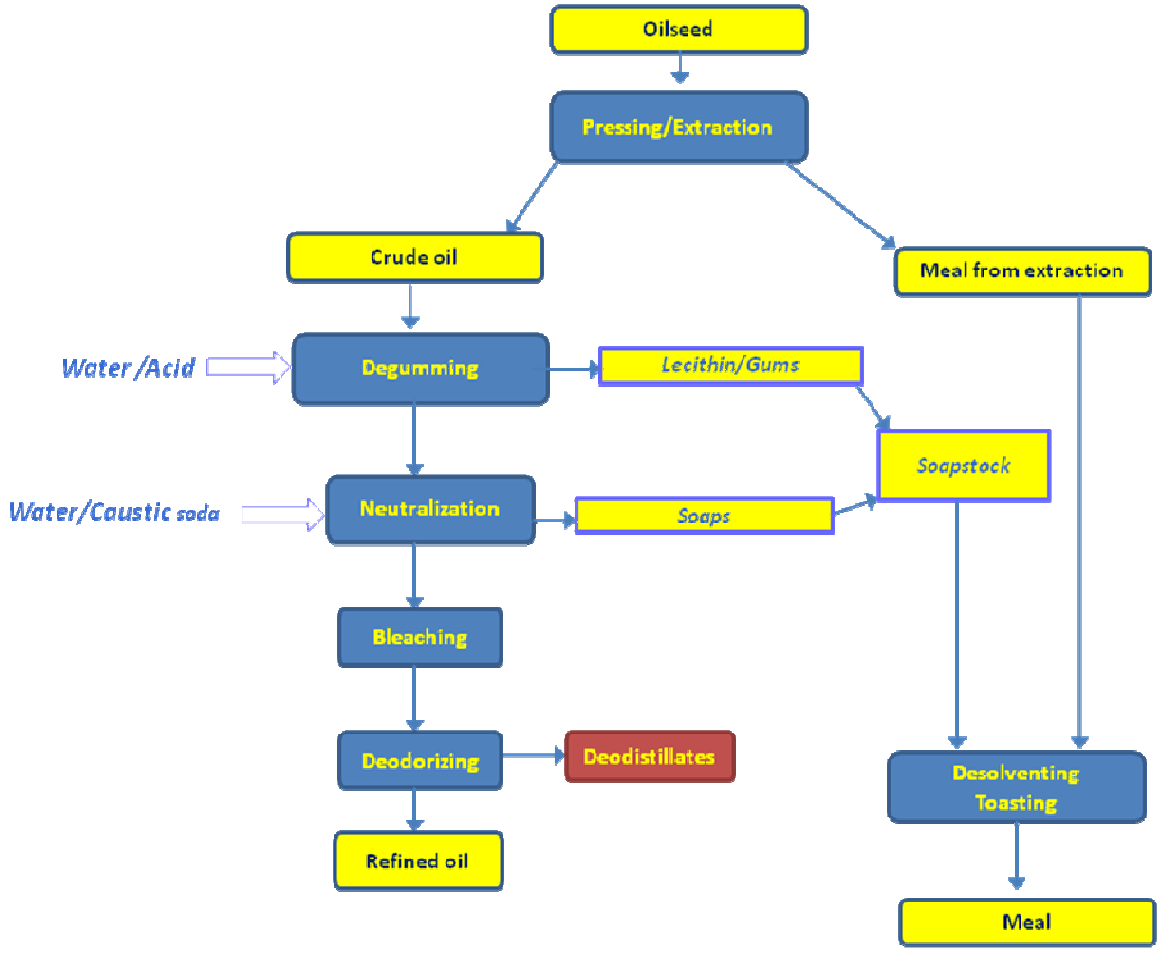
Example of a production flow of chemical refining



Soap stock can also be sold to the market as "soap stock" and can also be split by means of an acid into acid oils.

b. Bleaching and deodorisation

The neutralized oil is treated with bleaching earth; after filtering out the bleaching earth, the neutralized, bleached oil is deodorized at temperatures between 180 and 250 °C and under deep vacuum. This process is rendering deodistillates.

The composition of the deodistillates depends on the characteristics of the processed oil, the process conditions during deodorization and the design of the deodorizer. Aside from "desired" components (fatty acids, tocopherols, sterols), some of the volatile contaminants present in the neutralized bleached oil may concentrate into the deodistillates.

c. Treatment of deodistillates

To make deodistillates fit for feed, these products may need to be treated to reduce dioxin and pesticide residue levels to below the legal limits set for these in the Directive for Undesirable Substances 2002/32 (as amended by Regulation 227/2012).

Under the Feed Hygiene Regulation 183/2005 (as amended by Regulation 225/2012), as by-product of refining, deodistillates are subject to batchwise testing on dioxin.

The removal of contaminants from the deodistillates is ensured through different methods. Fractionation by means of distillation and treatment with activated carbon are examples of such methods. All the treatments methods need to be validated.

Conclusion

Deodistillates are nutritious and when treated with validated methods for reduction of hydrophobic contaminants, these products can be safely applied to feed.