Advertorial: Quality of lipids, the case of the Soybean oil.

Are you sure of the quality of the oil you are using?

To help answering this question, Kemin implemented the LET, Lipid Evaluation Test, a new customer service tool with the aim to diagnose the quality of oil or fat samples.

In the recent past Kemin implemented a new Customer Service named LET. The main target is to assign to each specific source of fats its appropriate quality indexes. LET gives two specific answers: the correct nutritional value per both young and adult animals (for both poultry and swine) in combination with the oxidative status and stability. Research has shown a large variability in the nutritional value between the same fat sources from different suppliers, but what about the oxidation status?

The soybean oil case

Soybean oil is without doubt the most used fat source in animal nutrition. All LET analyses, gave us the possibility to get a clear picture of the oxidation status and stability of this important ingredient.

The LET results from 34 different soybean oil samples highlighted oxidative problems in the vast majority of the sample. Analysed samples showed mainly primary oxidation issues as we can see from the Peroxide Values reported in the chart below.

![Figure 1. Oxidation status, PV and TBA values, of 34 soybean oils (Kemin internal publication SD-16-00068)](image)

Samples were also investigated for their stability to oxidation via an induced accelerated oxidation process (OSI test). 80% and 30% of samples have respectively low or very low stability to oxidation,
first of all due to the soybean oil composition (rich in unsaturated Fatty Acids, making it highly susceptible to oxidation) but also to absence or insufficient level of antioxidants.

In few cases soybean oil samples were completely oxidized, whereas the majority of them showed first signs of oxidation. This represent a critical point since oxidation is a progressive process (when started can’t be reverted), as well as an oxidized oil can work as pro-oxidant for other fats of the diet. The only way to avoid the previous mentioned risk is the use an effective antioxidant.

Kemin’s antioxidant solutions are designed to satisfy various customer needs, offering formulas based on synthetic antioxidants (ENDOX®, Barox™), or formulas without ethoxyquin and/or BHT and/or BHA (Paradigmox®), or formulated only with natural antioxidants (Naturox™), including a certified formula approved for use in organic feedstuffs. These last options would be of main interest for the European market as the market trend goes for ethoxyquin free antioxidant solutions.

The next chart shows the ability of a Kemin antioxidant to elongate the stability of a soybean oil previously tested for the LET and showing and OSI time < 10h.

![Figure 2. Paradigmox White Liquid (PWL) improves oxidation stability of soybean oil (Kemin internal publication SD-16-0006)](imageurl)