

Novel ingredients impact all aspects of animal and food production

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With the increase of the human population and concerns about sustainability, researchers are finding new options for animal feed and human consumption.

Novel ingredients, generally considered to be food ingredients that were not consumed before 1997 within the EU, are the key to a sustainable future within many industries and are the focus of research and development teams worldwide.

Here, I explore novel ingredients and the potential these ingredients hold for both animal feed and human consumption in future. Animals and humans can consume novel ingredients, but any ingredients in this category must not endanger or mislead consumers.

Types of novel ingredients

Novel ingredients are derived from many different sources.

Research in this field hopes to find new materials and alternative protein sources for aquaculture feeds and animal feeds. These ingredients can be taken from insects, microorganisms, fungi and algae. Other options include materials that are isolated from plants and minerals.

Novel ingredients offer consumers and animal owners a way to remove allergens, while catering to a wide variety of dietary requirements.

Examples of novel ingredients include insects, seaweed and single cell organisms, which have all been the subject of extensive research over many years. Many companies today are using these ingredients as high-protein alternatives, so they do not have to rely on traditional food sources.

These ingredients can be used for animal and human feed and food sources and are a more sustainable solution for the future. In the past, ancient grains such as quinoa or buckwheat have been researched. These are now commonly used to fulfill dietary requirements in baking and desserts. The same is happening with insects now. There are also novel ingredients that are used to fortify foods to increase their nutritional value. Examples of these include phytosterols which come from plants. Before any of these ingredients are put on the market, they must first be approved by the EFSA and EU Commission.

Novel ingredients production

The production process for novel ingredients usually involves a means of production that is not regularly used. Novel ingredients must be produced in a manner that is not detrimental to society or the environment.



The production method may adjust the structure and nutritional value. It can also remove substances from the ingredients, which makes these novel ingredients suitable for certain dietary requirements. Example of production processes includes enzymatic hydrolysis.

These processes use advanced technologies and the results are classified as novel ingredients as they weren't able to be produced before 1997.

Since the novel ingredient sector is still in its infancy, it may be difficult for producers to find clients, which is why platforms like Bygora are used to bring producers and buyers together.

Novel foods

A novel food is an item of food that has not previously been consumed in this manner or is produced using a new method. This can include newly developed foods or those produced using new technology or production processes.

The phrase may also be used to describe food that isn't typically consumed in a certain region of the world. In the United States, these types of food are referred to as new dietary ingredients.

However, novel products are regulated to ensure there are no issues with their safety.

Novel food regulation includes anything created as part of a production process that was not used before 1997. It can also include items used in supplements or foods created from engineered nanomaterial. Novel foods for human consumption are becoming more and more popular. Some of which you may eat every day as part of your diet now.

A prominent category of novel food is designer food, which is a type of food that hadn't previously existed in any market before.

This type of food is designed by bioengineering or biotechnical processes and is often referred to as genetically modified food. Examples of products that are produced in this manner include grains, milk, probiotics and enriched products. Companies often refer to this process as fortification and nutrification. Consumers need to be aware however that many claims associated with the benefit of these products may be exaggerated.

Novel Foods Regulation

As far as regulating novel foods, in the EU, a new Novel Food Regulation came into place in January 2018. This also covers insects as a source of food. Under

this regulation, novel foods in the EU must be tested in advance of their sale for consumption in any form. In the EU Regulation 2015/2283, the definition of novel foods is clarified, which also includes insects, foods from mineral origins and foods from cells or tissue cultures. The evaluation of novel food applications for approval is carried out by the European Food Safety Authority (EFSA).

The EU's list, which is part of the approval procedure, is maintained by the Commission. This lists the approved novel foods which may be marketed for consumption and makes it easier to establish what is and isn't fit for production.

For a novel food to be suitable for consumption, it must not present any dangers to consumers and must not mislead the consumer on about its benefits. Novel foods also shouldn't present nutritional dangers to consumers who may replace their regular food with these novel foods.

Other countries may have their own regulations, such as the Canadian Novel Foods Regulation. These will need to be considered by anyone producing or selling novel foods in these countries.

In Canada, for example, the Novel Foods Regulations state that novel foods are types of food that have never been consumed in this manner before or are created from a new process that hasn't been used previously.

Novel foods may also include genetically modified foods which offer distinct traits that set them apart from other foods on the market. At the current time, Canada has approved more than 90 novel foods which include items such as corn and canola.

There are still some concerns in this area, as with many other areas of the world, about health and safety, which is why they are subject to such strict regulations.

List of novel foods

The EU has published a list of novel foods. All of which are approved and fit for consumption. All of the ingredients on the list have an intended use, which is clearly stated on the EU's list. There's also a recommended maximum level of consumption per day.

Designer food is a type of novel food, which is created using bioengineering processes.

Examples of these include designer milk and designer grains. Included in the category of novel food are exotic fruits and vegetables, such as the Baobab dried fruit pulp. Noni fruit juice (*morinda citrifolia*) is another fruit that is now deemed safe for consumption.

As a result of the novel food regulations, there have been many successful product launches. Aiming to lower cholesterol levels, both Benecol and Flora ProActiv utilise phytosterols or phytosterols in their formula.

Novel ingredients for animal feed

Animal feed alternatives are one of the key reasons why novel ingredients have attracted so much attention in recent years.

The industry is looking for a solution for sustainable feed, which will provide long-term alternatives to consuming current feed. For both animal feed and aquaculture feed, they used traditional ingredients and feed for their diets to provide a good source of protein.

However, as these are finite sources of feed, they are now considering novel ingredients instead. Algae proteins are a popular source of protein, which is now being used to feed animals, including fish, pigs, cows and sheep. Examples of algae proteins include seaweed, chlorella and spirulina, all of which can also be consumed by humans.

For animals, another good novel ingredient source are insects. Novel ingredients can be derived from insects or marine plants and insects proteins are being considered for animal and aquatic feeds more frequently nowadays. In the aquaculture feed industry, insect proteins have been allowed since 2016 and when combined with

microbial organisms can provide a nutritious food source.

Novel foods for human consumption

Many novel ingredients and foods are currently being used for human consumption. They are primarily ingredients that are part of final products. Exotic fruits fall under this category, such as the Baobab and Noni fruits and juices.

For those with a baby or a young child, many formulas and baby foods include N-Acetyl-D-neuraminic acid. Another area in which novel ingredients are being used regularly is baking, where algal oil from microalgae can be added to rolls, bread, and biscuits.

Spreads and butter replacements often incorporate oils into their production process, and Allblackia seed oil is an example of this.

Other ingredients proved to lower cholesterol levels, with products such as Benecol. When viewing the list of novel food ingredients, you see that many are recommended for use in supplements and can easily be found nowadays in health food stores.

There is a regulation for novel ingredients and food. Therefore, these ingredients are a safe and effective source of nutrition for animals, including fish, and for humans.

When considering more sustainable animal and fish feed options for the future, novel ingredients will only become more prevalent within these industries.

Thanks to the strict regulations, you can add novel ingredients to your daily diet without concerns about their side effects or research methods. Therefore, we expect novel ingredients will become an even more prominent source of protein and feed ingredient in future years.