

Feed components from fungi: the key to a sustainable fish supply?

The global feed production has seen an impressive increase over the last couple of years. From 2001-2016 there was an increase of 161 million tons produced and the total annual production for 2017 was projected to finally reach the 1 billion mark! As the world population keeps rising steadily one can only assume that the need for animal products will string along.

Countries with a rapid income growth have shown an interesting increase in the demand for fish. China is a prime example, where urbanization and population growth has led to it taking the number one spot on the list of global fish consumers. Naturally this leads to many opportunities regarding fish feed production, where a higher output and quality is necessary.

When breeding fish for consumer purposes, also known as fish farming, there are some key aspects to the process that cannot be overlooked. Whether we are talking about organisms in the microbial domain, or multicellular lifeforms such as cows and pigs, they all require proper nutrition and cultivation conditions to grow strong and healthy. Fish are no different in this regard and should be provided with all of the essential amino acids, fats, carbohydrates, vitamins and minerals to stay happy and satisfied.



So what do fish eat? The answer is everything from plankton to sea grass and even other fish. Obtaining these food sources is obviously not a realistic approach when fish farming as you need to produce large quantities of fish and the food has to be provided in bulk. Companies therefore turn to artificial options that can be mass produced, like fishmeal, soybean meal and brewers dried yeast.

Fishmeal is rarely excluded from fish feed products these days due to its well accommodated amino acid profile and attractant properties. It is usually made from residues in the canning industry and other fish processing sectors where the products are not considered for human consumption, making it an excellent option. However, there is a catch to it ... fishmeal happens to be very expensive! As a result of this, customers are looking for cheaper alternatives.

The fishmeal is commonly substituted with soybean meal, which is widely available with modern agricultural technology. The soybean crops find their way into many applications with an emphasis on food products owing to the high protein content in the beans. The production process has unfortunately been cast in a negative light since it is attributed to deforestation and the occupancy of precious land that can be used for other purposes.

In recent years there has been an awakening in the general public when it comes to environmental responsibilities, putting an immense pressure on companies to deliver sustainable and eco-friendly products. A possible solution that stands out from its competition has been presented by researchers at Mycorena AB, a biotechnology company in Sweden, where the key method relies on the use of edible filamentous fungi as a substituent component for the feed industry. You might think that the concept of using edible microorganisms is hardly of any recent discovery, which is true, but the beauty in the process lies within the source from where the fungi are created.



Almost all industries you can imagine produce some type of waste material, an example being the ethanol industry, where large amounts of liquid waste are produced. The handling and disposal of these products are of major concern as they usually contain toxic substances that bring all sorts of unwanted environmental effects. The numerous methods used today all have something in common, they are inefficient or damaging in some way.

As noted by researchers at Mycorena, the fungi can grow on various waste materials while reducing the amount of toxic compounds. They also have a high protein content with an amino acid profile comparable to many current fish feed products. Using different waste materials as substrate for the cultivation of these microorganisms could potentially reduce the need for fishmeal and soybean protein while having a positive environmental impact on many fronts. This is what sets Mycorena apart from the rest, an original and innovative approach to real life problems.

Bardh Limani

Process development intern,
Mycorena AB,
Sweden
bardh@mycorena.com