

Challenges of Meat-Less, Meat-Like Products

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There is currently a lot of attention being given to the topic of alternative protein, “meat-like” products, which is causing concern among some people who are involved in the production of meat in the traditional fashion. There are many new descriptors being disseminated through all forms of the media, such as plant-based meat, cultured or lab-grown meat, meat-less meat, fake meat, “clean” meat, and more.

Plant-based meat analogs are not new. There are a number of meat-like products on the market made from textured wheat proteins and many plant-protein ingredients, such as soy, pea and rice proteins, Konjac flour, etc. These ingredients, and a variety of starches and flours, can extend meat or add fat-like texture to meat or meat-less products. There are a number of meat-less burgers on the market now, one of which I saw promoted on a restaurant menu as being “for people who love meat.” And this segment of the market appears to be growing.

The cultured or lab-grown meat is the new concept, that is attracting the most media attention. This is a high-tech process involving cell development to form the culture from animal cells, then developing cell culture media to provide nutrients for the cells to grow on, and development of a support structure as cells differentiate into muscle, connective tissue, and fat cells. This product is not commercially available at this time.

The “clean” adjective has been attached to cultured meat, as some people feel that this product is better for the environment and that the manufacturing process removes the “ick” factor that some associate with animal harvesting and meat processing. But, the use of the word “clean” is very misleading. There is the point that cultured meat would not be expected to be exposed to pathogen contamination as can happen with traditional processing. However, as consumers learn about the extensive processing that is involved, using many “processing aids,” in making these “lab-grown” products, the “ick” factor returns quickly. Not to mention that using the word “clean” with the word “meat,” suggests that there is something not clean about meat produced from traditional processes. And should the word meat be in the name of this product?

Under meat inspection, these lab-grown products could not be labelled as meat, according to the Labeling Standard of Identity. The problem is that it is not clear whether USDA or FDA will regulate the production of the cultured meat-like products, which was the motivation for the new Missouri law. Prior to Missouri’s new meat-labeling law, the United State Cattlemen’s Association filed a petition with the U.S. Department of Agriculture requesting that USDA establish a food labeling requirement that the word “beef” only be used to label meat products that “come from cattle that have been born, raised and harvested in the traditional manner.”

What is also concerning is the safety of the ingredients that are going into some of these products. One of the “meat-like” burgers that is available in restaurants now contains a “heme” protein, a genetically-engineered protein called soy leghemoglobin. This ingredient is claimed to give a “meat-like” color and flavor to the non-meat burger, however, the safety of this new ingredient for human consumption has not been proven.

Another meat-less burger that is available in supermarkets now, is made with mycoprotein, which is a single-cell protein, produced through a fermentation process using the fungus *Fusarium venenatum*. And this comes at a time when consumers are claiming to want natural, minimally processed food products, but the truth is that these cultured/lab-grown methods do not meet any of the requirements for natural and minimally processed foods.

Whether or not these new alternative protein products have much impact on meat and poultry sales will likely depend upon how close that the developers can imitate the flavor and texture of real meat. The novelty of these plant protein products is causing many people to try them, but the percentage of return customers remains to be seen. Producing a meat-less burger or sausage-like link is much easier than producing a fake steak or roast.

Another challenge to producing these alternative protein products is being able to make the product at a competitive price to real meat. There is always room for dietary diversity with the availability of these products, but it is hard to imagine that these alternative proteins will disrupt the livestock and meat industry any time soon. However, it is important that the livestock and meat industries should not rest on their laurels and that they must continue to work on improving the quality and safety of their real meat products.

Resources:

Davis, Carolyn. 2018. Mimicking Meat, Seafood, and Dairy. *Food Technology* 72(5): 23-35.

Henderson, Greg. 2018. Protein’s Disruptors Threaten Traditional Red Meat, Poultry Industries. *Drovers Journal*. <https://www.drovers.com/article/proteins-disruptors-threaten-traditional-red-meat-poultry-industries>

LaMotte, K., A. J. Sachs, and M. R. Morales. 2018. USDA Accepting Public Comments on “Clean Meat” Labeling Petition. *News Alert*, Beveridge & Diamond, PC. April 5.

Perls, Dana. 2018. From Lab to Fork. *Critical Questions on Laboratory-Created Animal Product Alternatives*. Friends of the Earth U.S.

Specht, Liz. 2018. Is the Future of Meat Animal-Free? *Food Technology* 72(1):17-21.