

Scientists invent a new way of creating meat analogs

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Credit: Immanuel Kant Baltic Federal University

Worldwide focus on meat analogs keeps increasing to start producing vegetable protein non-cholesterol products containing essential amino acids. Extrusion is the best way to texture vegetable proteins. This is a method of processing raw materials in which the destruction of secondary bonds in protein molecules occurs, thus increasing their digestibility.

In recent years, high-humidity extrusion technology has become widely used, as it makes it possible to obtain a fibrous meat-like structure from [vegetable](#) proteins.

The characteristics of vegetable-meat analogs can be changed or improved by adding food additives, such as, for example, wheat gluten. Despite a large number of studies aimed at optimizing the extrusion process to adjust the taste and texture characteristics of meat analogs, research in the field of adjusting the taste of extruded meat analogs with a high moisture content is not entirely complete.

IKBFU Scientist Olga Babich together with Chinese colleagues has studies studied the influence of the mass fraction of moisture and the content of wheat gluten on such characteristics of meat analogs obtained by extrusion as retention of volatile aromatic substances, microstructure, moisture distribution, and secondary [protein](#) structure. The results of the study were published in the article "Effects of material characteristics on the structural characteristics and flavor substances retention of meat analogs," in the *Food Hydrocolloids* scientific journal.

The results of the study will be applied in the food industry. The regularities obtained during the study will allow controlling the exposure of aromatic substances (esters, aldehydes, alkanes, alkenes, phenols, alcohols) in the technological process for producing extruded meat analogs by creating a suitable microenvironment in products.

IKBFU Scientist, Olga Babich notes, "A decrease in meat consumption has been observed worldwide, due to health concerns, as well as environmental, ethical and social reasons. Therefore, the practical value of our study is undeniable. Switching to a diet based on vegetable proteins means decreasing [body weight](#), cholesterol, and blood pressure, thus reducing the risk of stroke, cardiovascular and oncological diseases. In this regard, there is increasing interest in meat analogs (vegetable

meat, or soy meat) obtained by extrusion. Since the second half of the 20th century, low moisture extrusion technology (with meat-like structure from vegetable proteins. Due to the relatively low temperatures and short cooking time that distinguish extrusion, amino acids are not destroyed."

More information: Zengwang Guo et al, Effects of material characteristics on the structural characteristics and flavor substances retention of meat analogs, *Food Hydrocolloids* (2020). [DOI: 10.1016/j.foodhyd.2020.105752](https://doi.org/10.1016/j.foodhyd.2020.105752)

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