

## 1. Chia and quinoa byproducts as potential antioxidants for the meat industry

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**Introduction.** In the diet of the population, products such as chia seeds and quinoa began to appear more and more often. In addition to the use of chia seeds, processed products such as oil and fiber are becoming popular, which can also be used in technologies for making daily products.

**Materials and methods.** To develop further directions for the use of chia seeds, we summarized data on the composition and identification of biologically active compounds with antioxidant properties in chia seeds, quinoa and their processed products.

**Results.** Analysis of scientific materials allowed us to establish that by-products of chia and quinoa processing have a great technological potential for the development and improvement of meat products, since the oxidation process is one of the reactions that are responsible for the deterioration of quality and reducing the shelf life of these products. Based on this, the study of antioxidant compounds contained in chia seeds, the development of strategies for the rational use of these substances and innovative technologies to enhance their antioxidant effect in food products is a relevant area of research.

The use of synthetic antioxidants in food products is a concern, which makes it necessary to find affordable and effective sources of natural antioxidants. Alternative sources of such compounds include chia seeds, quinoa, and their processed products. This is due to the content of bioactive compounds (mainly phenolic compounds), which are characterized by various types of biological activity, including antioxidant properties. The main bioactive compounds identified in quinoa products are phenolic acids (mainly rosemary and chlorogenic acids), flavonoids (mainly quercetin and isoquercetin) and nitrogen-containing compounds (mainly betalins: betacyanins and betaxanthins). Nitrogen-containing compounds are water-soluble pigments of hydrophilic nature with promising bioactive potential found in colored quinoa grains. On the other hand, chia processing products are a promising source of phenolic acids (mainly Rosemary, Ferulic, and caffeic acids) and flavonoids (mainly rutin, myricetin, and quercetin). Chia products also contain isoflavones (mainly daidzin, genistin, and genistein) and tocopherols ( $\gamma$ -tocopherol). This complex of antioxidant compounds allows them to be used in the technologies of soft products not only to improve food and technological properties, but also as antioxidants of natural origin, the properties of which are mainly manifested in the control of lipid oxidation processes. However, additional study requires the relationship between the parameters of lipid oxidation and the antioxidant capacity of the matrix, which may vary depending on the type of product, the nature of other ingredients, processing technology, etc.

**Conclusions.** Chia seeds, quinoa and their processed products open up a wide range of opportunities for the meat industry in the direction of optimizing recipes, improving properties and developing health products.

### References

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