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MICROWAVE INSTALLATION WITH CONICAL RESONATORS FOR THE HEAT TREATMENT OF INEDIBLE MEAT WASTES

Abstract. *The aim of the research* is to develop ultrahigh-frequency installations and technologies for heat treatment of inedible wastes of animal origin in a continuous mode to increase the feed value of the protein product. In connection with the aim, the main objectives were solved, which allowed to manufacture and test in the production conditions of microwave installations for the heat treatment of inedible wastes of animal origin and to assess the technical and economic efficiency of their introduction into farms.

The objects of research are the technological processes that provide heat treatment of multicomponent raw materials, experimental and test samples of ultra-frequency installations. The subject of research is the detection of laws of the influence of the electromagnetic field of ultrahigh frequency on multicomponent raw materials of high humidity for determination of effective operating modes of functioning of ultrahigh-frequency installations in the continuous mode.

For the implementation of microwave technology for the heat treatment of multicomponent highly-humid raw material multi-generating radio-leak-tight installations with a low-power magnetron air cooling, ensuring the continuity of the technological process and the repeated impact of EMF of UHF, at sufficiently high electric field intensity and the own Q-factor of the resonator was developed. The configuration of the working chambers provides for the possibility of ensuring uniform heating of raw materials and varying the productivity of the installation, with the implementation of its sanitary processing.

There were developed two microwave setups with a conical resonator for the heat treatment and disinfection of inedible wastes of animal origin, providing the high electric field, the continuity of the technological process in compliance with radio leak-tightness.

Keywords: microwave generator, magnetron, biconical and tetraconical resonators, inedible wastes of animal origin, heat treatment and disinfection, continuous mode.

Introduction. In accordance with the strategy for the development of the Russian Federation processing industry until 2020 and the Federal Scientific and Technical Program for the Development of Agriculture for 2017–2025, approved on August 25, 2017, No. 996, which provide for the tasks of ensuring the import substitution of biological supplements by increasing their own production and increasing the efficiency of technology for processing inedible wastes of animal origin, the development of scientifically-based technology and technical means to increase the feed value is *relevant*.