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Use of Polymeric Sorbents ForProcessing Fruit Pomace For Healthy Diet

ABSTRACT

In order to obtain pectin powder a hardware-technological scheme of fruit pomace processing using polymeric sorbents is designed. At the stage of pomace extraction in the scheme polymer sorbents and electroactivated aqueous solution (anolyte) sodium chloride were used. This powder can be used as a food additivein the canning, confectionery and bakery.

Keywords: fruit pomace, polymeric adsorbents, extraction, pectin powder, electrochemical activation, anolyte.

Fruit pomaces contains valuable mineral and organic acids, pectin and other extractive substances and therefore can be used in various food purposes [7].

Nowadays improvement of food technologies is seen due to application of intensive factors influencing both plant materials, and water solutions participating in processing raw materials. One of such factors is application of electrotechnologies including a method of electrochemical activation (ECHO) created more than 25 years ago and which has been distributed in many branches of food industry [1,3]. The ECHO allows directly to change acid-base and redox properties of water, to synthesize from water and dissolved substancesto chemical reagents (oxidizers or reducers) in metastable state [2].

Use of polymeric sorbents is a new perspective direction in processing industry on industrial production from secondary vegetable raw materials of food powders [7].

The aim of this research is to receive fruit powder from fruit pomace by impact of the ECHO method on low-concentrated salt solutions. As a result of carrying out the ECHO in a zone of one of electrodes a metastable product anolyte is obtained, possessing increased selective extracting ability.

The hardware and technological scheme applied in production of apple powder includes the following processes and the equipment:

Extraction of fresh pomace was carried out withNaCl salt aqueous solution electroactivated in an anode camera of the diaphragm electrolyzer with concentration of 0,1%, pH 3,5 and redox potential Eh = 0,65 at temperature 60C degrees within 20 minutes in a screw extractor at a ratio of firm and liquid phases 1:5.

Polymeric sorbents were applied fordivision of liquid and firm fraction[6].

Regeneration of polymeric sorbents was carried out in a centrifuge for receiving liquid fraction [5];

Powder was obtained by vacuum evaporation with subsequent low-temperature drying in the spray evaporator.

As a result of carrying out extraction we received extract and pro-extracted pomaces.

The extract enriched aromatic, dyes, organic acids is possible to use in production of nectars and juice drinks, and the pomace rich with cellulose and pectinaceous substances can be used in receiving food powders. Powder production was divided consistently into three steps by wiping of pro-extracted pomaces in apulpifier,

vacuum concentration and drying. The pectin extract concentration was carried out in a vacuum evaporating set at boiling temperature not above 60C to the content of solids 20-25%.

The concentrated solution was distributed into a spray drier by a pump, it being dried due to thin dispersion of 5-10 sec. at temperature 140C till moisture of a ready-made product of 4-6%.

High intensity of moisture evaporation during the drying process was reached due to thin dispersion of a dried-up product in the drying camera. Thus, at the expense of big surface of the contact the drying process lasted 4 - 15 sec. This circumstance allowed to receive a qualitative powdery product, well soluble and not demanding further crushing. The powder after drying is packed up in a tight container.

The received powder can be restored by water, thus mashed potatoes are formed. The fruit concentrate can be used for production of kissels and mousses, and also as a food additive in confectionery production and bread baking. In comparison with known technologies such powder has higher nutrition value and a bigger period of storage.

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