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РОЗДІЛ 1

АКТУАЛЬНІ ПИТАННЯ ЗБЕРІГАННЯ ТА ТЕХНОЛОГІЇ ПЕРЕРОБКИ ЗЕРНА, ОВОЧІВ ТА ФРУКТІВ

HULLESS BARLEY MULTIFUNCTIONAL FOOD GRAIN

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Barley has always been not only the raw material for brewing, and also valuable food crop. Barley uses for producing different groats, instant cooking products, flour, composite flour, cereal flakes. Main barley producing countries are EU countries, Canada, Turkey, Russia, Ukraine, Australia, Argentina and the USA. But today, conventional barley, by all indications inferior to hulless barley (Hordeum vulgare L. var. nudum Hook. f.) which contains more proteins, lipids and vitamin E, less sugar and cellulose. In addition, hulless barley contains β-glucans which contribute significant reduction of cholesterol in human blood plasma and prevention of cancer and prevention against cardiovascular disease, diabetes.

An important indicator of the quality of the brewing malt is an indicator of falling number, which is not included in DSTU 3767-98. For malting barley production seeds should be viable. Pre-sprouted seeds has a reduced ability to germination during the malting process which reduces the quality of beer. Half of this barley is not suitable for the production of beer after storage [1]. A slight germination of seeds cannot be detected by visual inspection, it is can be measured by the amylase activity [1]. To avoid purchase of pre-germinated barley need to conduct a Falling Number test [1]. For the high quality barley indicator of Falling Number should be more than 250. For the German Standards indicator of Falling Number should be not less than 150 [2]. Indicator of Falling Number of hulless barley may be useful to assess its suitability in a bread baking industry.

Barley variety «Achilles» grown in fields of Odessa Plant Breeding and Genetics Institute, ational centre of plant cultivation and kind research UAAN in 2014 year was taken for the purpose of study the properties of hulless barley as the raw material for the food industry. Different particle size samples were taken for determine the quality parameters of barley. Samples were obtained by fractionating using sieves with oblong holes of 2,5×20 mm and 2,2×20 mm. Protein content of fractions was determined according to the method GOST 10846-91. Falling Number of each sample was determined according to the method GOST 27676-88.

It was discovered that fraction obtained by overtail of sieve 2,5×20 mm contain 15,81 %, of protein and fraction obtained by overtail of sieve 2,2×20 mm contain 16,37 %. The Falling Number of obtained by overtail of sieve 2,5×20 mm is 559 and fraction obtained by overtail of sieve 2,2×20 mm – 474. According to the requirements of ukrainian standard DSTU 3767-98 Barley Specifications studied samples of hulless barley for quality is suitable for production of malt.

Therefore barley is a multifunctional crop. If processing hulless barley for food purposes (flour, groats) then even after preparation of the product, remains more proteins compared to traditional products from conventional barley. Hulless barley can be used for malt production and beer mash. Determination of the Falling Number helps to identify the number and activity of amylase

Fractionation of hulless barley during postharvest handling allows improving its quality as a raw material for the food industry.

Scientific Supervisor – DSc, Professor Stankevych G.

Literature

1. Perten Instruments [http://www.perten.com/ru/3/--/1/-2/]

2. Хельмут Роглер, Пивоваренный ячмень. Ситуация на мировом рынке и технология возделывания в Германии [Текст] / Хельмут Роглер // Материал для доклада ТрисдорфКонсалт. – 14.06.06. – С. 7.

COMPOSITION OF PRODUCTS INTERACTION SUGAR-JUICE DEFECATION SLUDGE WITH SUBSTANCES OF ACID NATURE

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An introduction. Of sugar-juice defecation sludge is chemical setting of sugar-refinery, it is using as fertilize for acid grounds [1], application of which is not knowing into other branches. News are published about investigations of this precipitation as adsorption for purification of sludge waters from dye [2] and component of mixtures with NPK-fertilizes [3]. Studing of sugar-juice defecation sludge is not realized in other fields. There for purpose of this research is to study reactions of calcium carbonate precipitation of sugar-juice defecation sludge, chemical composition of which is determined [4, 5].

The experimental part and discussion of results. Acid oxides MoO_3, WO_3, phosphate acid H_3PO_4 is had quality "A. R. purity", sugar-juice defecation sludge was toor from Kapitanivskyy sugar plant of the Kirovograd region for experiment. Methods of chemical analysis (trylonometria [6] – for determination quantity of Ca^{2+} and precipitation NH_4MgPO_4 – for determination of quantity PO_4^{3-}– ions [7]), pH-measuring (pH-metr type Y-160 MY), termogravimeasure (derivatograph Q-1500-D system P. Paulik – L. Paulik – L. Erdey, corundum tuble, rapid of heat rate is 0,1667 grad/s, DTA – 250, DTG – 500, TG – $0{,}2 \cdot 10^{-3}$ кг) and X-ray (DRON 3M with Cu $_{k\alpha}$-ray) are used.

Mixtures of calcium carbonate of sugar-juice defecation sludge and MoO_3 or WO_3 were toor at proportion $[CaCO_3] : [EO_3] = 1{,}0 : 1{,}0$, E – Mo, W.

Results of termogravimetric analysis of investigated mixtures are representative into table.

Results of termogravimetric analysis of mixtures of calcium carbonate of sugar-juice defecation and MoO_3 or WO_3

Composition of mixtures, mol	Temperature of anhydration, ^oC	Temperature of termolysis and reduction of EO_3, ^oC	Temperature of interaction, ^oC	Finished substance
$[CaCO_3] : [MoO_3] = 1{,}0 : 1{,}0$	110–190	250–530	580–827	$CaMoO_4$
$[CaCO_3] : [WO_3] = 1{,}0 : 1{,}0$	120–190	240–528	645–863	$CaWO_4$

Nature of finished products of those reactions are studied by method X-ray and enstaled of its belong to tetrahedral symmetry with parameters for $CaMoO_4$ a = (0,5237±0,0002) nm; c = (1,147 ±0,0005) nm; for $CaWO_4$ a = (0,5225 ±0,0002) nm; c = (1,144 ±0,0005) nm. Differ of thouse quantities of parameters of unit cells from literature facts [8] is coused admixtures of MnO, Fe_2O_3, SiO_2, TiO_2 and ZrO_2 into prepared products, thus its are modificed oxidic materials for metallurgy [9].

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