



národní
úložiště
šedé
literatury

Pressure Hydrolysis of Protein in Waste of Chicken Cartilage and Feathers in the Presence of Carbon Dioxide

Hanika, Jiří
2015

Dostupný z <http://www.nusl.cz/ntk/nusl-189274>

Dílo je chráněno podle autorského zákona č. 121/2000 Sb.

Tento dokument byl stažen z Národního úložiště šedé literatury (NUŠL).

Datum stažení: 07.08.2024

Další dokumenty můžete najít prostřednictvím vyhledávacího rozhraní nusl.cz .

PRESSURE HYDROLYSIS OF PROTEIN IN WASTE OF CHICKEN CARTILAGE AND FEATHERS IN THE PRESENCE OF CARBON DIOXIDE

Hanika J. ¹, Šolcová O. ¹, Kašťánek P. ²

¹*Institute of Chemical Process Fundamentals of the CAS, v. v. i., 165 02 Prague 6;*

²*EcoFuel Laboratories s.r.o., Prague, Czech Republic*

One of the waste material flows in the poultry houses represent the cartilage and feathers, whose disposal is currently dealt with anaerobic fermentation for biogas production. It is uneconomic to mix these flows with other waste from slaughterhouse processing lines. Other methods of disposal of such wastes like incineration, composting are problematic-burn and composting very slowly decomposes of that. This material is protein in nature, as it contains the prized collagen or keratin. Pure collagen is gelatin, which is used in the food industry as an ingredient with a reduced fat content. Gelatin in food has, of course, the importance of food joints, since supplies necessary amino acids for the regeneration of cartilage, skin and nutrition for dermatological creams, etc.

Hydrolytic splitting of peptide bonds in protein structure provides a mixture of feathers or cartilage amino acids of high nutritional value. The resulting aqueous solution can be applied to the dressing plant, achieving the recycling of biogenic elements in the agricultural process. After more profitable refining and concentration is obtained on a valuable nutrient. To achieve hydrolysis application of acidic or alkaline environments and increased temperature is needed, but the use of inorganic or mineral acids is disadvantageous as the resulting hydrolysate before the application requires modification of pH neutral, which leads to the salt containing hydrolysate.

Hydrolysis of raw materials from *Rabbit, a.s., Trhový Štěpánov* was cheaply carried out with the use of carbon dioxide, which dissociates in water solution, creating an acidic environment needed and is easily detachable from the reaction mixture after the reaction. Its concentration in the water was sufficient to ensure the pressure (10 to 20 bars). Bench scale tests were performed using the autoclave volume 2.5 lt. stirred at a temperature of 105-120 °C. The resulting aqueous solution of amino acids contained in the same representation as the collagen and keratin in raw material.

The study is dealt with in the framework of the project "Centre of Competence for Biorefinery Research BIORAF" (TE01020080) with the financial support of the Technology Agency of the CZECH REPUBLIC.