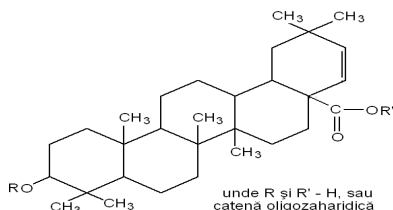
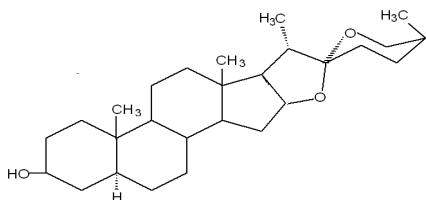


The invention relates to microbiological processing of organic waste from food and agricultural product processing industry with the production of an ecologically clean energy product – biogas, consisting primarily of hydrogen. The invention can also be used for the purification of highly polluted waste waters or in other areas of the national economy, where are formed organic waste of vegetal and animal origin.

The proposed process for production of biohydrogen includes the anaerobic fermentation of distillery refuse from wine stock distillation processes and alcohol production in the presence of methanogenesis chemical inhibitors, which are biologically active vegetal substances of isoprenoid nature, added to the amount of  $1 \cdot 10^{-3} \pm 5 \cdot 10^{-4}$  mass % of the waste weight. The fermentation is carried out at pH=5.2...7.5 in mesophilic conditions, at  $33 \pm 2^\circ\text{C}$ , at the stirring of distillery refuse and continuous removal of hydrogen from bioreactor. As methanogenesis inhibitors can be used triterpenic compounds gypsogenin or gypsogenin glycosides with the following general structural formula:



or neotigogenin saponin – a  $\text{C}_{27}$ -spirostan steroid with the following structural formula:



It can also be used limonene (1-methyl-4-isopropenylcyclohexene-1), menthol (3-methyl-6-isopropylcyclohexanol) or  $\beta$ -carotene.

The process provides a hydrogen formation rate within the limits  $1.9 \dots 2.2 \text{ L}(\text{H}_2)/\text{L}(\text{distillery refuse}) \cdot \text{h}$ , and the content of molecular hydrogen in the resulting biogas reaches  $59 \dots 68 \text{ vol. \%}$ , at the same time methane is practically absent in the biogas.

Claims: 6