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(54) Title: UTILIZATION OF STARCH PRODUCTS FOR BIOLOGICAL PRODUCTION BY FERMENTATION

(57) Abstract: This invention relates to a method for utilizing less purified starch in fermentation processes. One example is a recombinant *E. coli* containing a exogenous extracellular isoamylase activity that is capable of utilizing small oligomers containing (1, 6) linkages (including but not limited to isomaltose and panose) in fermentations to produce useful products. The invention is useful in large-scale industrial biofermentations by reducing the cost of the substrate carbohydrate.



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