

ABSTRACT

An object of the present invention is to provide means for preparing a monosaccharide by efficiently hydrolyzing a polysaccharide. In particular, in a method that uses a homogeneous acid catalyst to obtain a monosaccharide from a polysaccharide, a low energy, low cost catalytic separation method is provided, and in addition, a method for obtaining high reaction selectivity is provided. In addition, provided is a homogeneous acid catalyst separation method that separates a homogeneous acid catalyst from a homogeneous acid catalyst-containing solution with high efficiency and realizes a high homogeneous acid catalyst recovery ratio at low energy costs, and that is applicable to a variety of reaction systems.

The present invention is a method for preparing a monosaccharide by hydrolyzing a polysaccharide using a homogeneous acid catalyst,

wherein the method comprises a hydrolysis step of hydrolyzing a polysaccharide using a homogeneous acid catalyst with a molecular weight of 200 or greater to generate a monosaccharide, and a separation step of the homogeneous acid catalyst after hydrolysis, and

the separation step includes at least one step selected from the group consisting of the following (A) to (C):

(A) a step of separating the homogeneous acid catalyst by performing homogeneous acid catalyst membrane separation treatment using a molecular sieve membrane, on a homogeneous acid catalyst-containing solution after the hydrolysis step;

(B) a step of separating the homogeneous acid catalyst by performing organic compound thermal decomposition treatment on a hydrolysis reaction residue separated by solid-liquid separation after the hydrolysis step; and

(C) a step of separating the homogeneous acid catalyst by performing homogeneous acid catalyst elution treatment using an alkaline solution or an organic solvent-containing solution,

on the hydrolysis reaction residue separated by solid-liquid separation after the hydrolysis step.