

## S35-4 Production of useful saccharides using microbial enzymes

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Trehalose and ascorbic acid 2-glucoside (AA2G) as main products of our company were discovered by steady screening, and are produced by employing our original techniques using enzymes derived from microorganisms.

Trehalose is a non-reducing disaccharide formed by two glucose molecules jointed by  $\alpha,\alpha$ -1,1 linkage, and it is found in a wide variety of organisms. In 1994, we discovered a new enzyme system facilitating trehalose production from inexpensive starch. In addition, using starch-associated enzyme technology we developed, we achieved a trehalose production rate of 85% or more on an industrial scale. As a result, the price of trehalose could be reduced to about 1/100, and the expansion of its application to the food field became possible.

AA2G has a glucose bound to the hydroxyl group of the second carbon (C2) of ascorbic acid (AA). AA2G shows stability from high temperature and oxidation compared with AA. Aiming at industrial production, we examined various enzymes, and found that the use of the transglycosylation reaction catalyzed by *Bacillus stearothermophilus*-derived CGTase we developed is appropriate.

In this symposium, I talk about the history of the research and development of both products and their production processes in which breakthroughs were achieved, and introduce differences between our research and that in universities and attractive points regarding our research also based on my experience.