

CARBOHYDRATES FOR ETHANOL AND DISTILLED BEVERAGES

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Carbohydrates had been used for ethanol production for thousands of years. In the beginning a natural fermentation to produce alcoholic beverages has been mentioned in the literature. Fermented beverages it is known to be drunk for more than 10.000 years.

The presentation will summarize the most important carbohydrates used today in an industrial scale to produce ethanol as fuel and industrial grade ethanol, and also some important distillate beverages like cachaça (Brazil), tequila (México) and rum (Caribe).

Carbohydrates for fuel and industrial alcohol are extracted from sugar cane (sucrose, glucose and fructose) and used up directly by the yeast convert into ethanol. The grains (corn, wheat, sorghum, etc.) have the starch as the substrate for the ethanol production. However, the starch has to be hydrolyzed by two enzymes, alfa-amylase and glucoamilase to be transformed by the yeast to ethanol.

Cachaça and rum have the same carbohydrates as substrate (sucrose, glucose and fructose), although cachaça uses the cane juice and rum the molasses (residual sugar from a sugar factory). Both fermented mash are distilled to produce the beverage.

Tequila uses a polysaccharide like inulin (fructosan) which is hydrolyzed (given fructose) by heating the agave plant to be used by the yeast to produce ethanol and them, distilled to produce the tequila beverage.