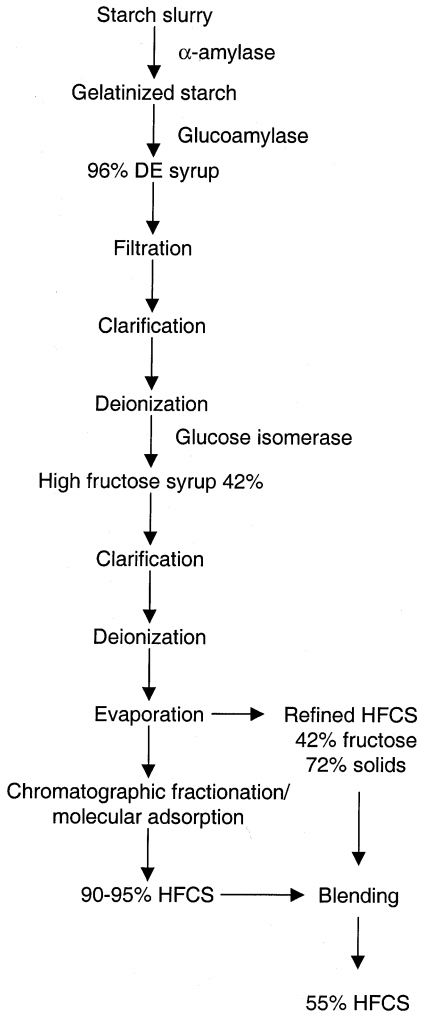

Figure A.5. Process schematic for HFCS production.

refining of fructose corn syrup, and conversion of 42% fructose- to 55% fructose-containing HFCS.

First, corn starch is gelatinized by cooking at high temperatures such as 65ºC and is converted to dextrose (liquefaction) by thermostable-amylase in a two-stage continuous reactor. The product is a dextrose-rich syrup containing 10 to 15 DE. The conditions in liquefaction reactors are 105°C and a 5- to 10-min holding time for the first reactor; and 95°C and a 90- to 120-min holding time for the second reactor. The feed starch slurry contains 30–35% solids with 0.1 to 10% enzyme at a pH of 6.5. The total and soluble protein contents of the starch slurry should be lower than 0.3% and 0.03%, respectively, to avoid color formation as a result of the Maillard reaction between amino acids and sugars at high temperatures. Saccharification of liquefied starch slurry is achieved by using the