

PREPARATION OF SUGAR SYRUP (DE 50-70) FROM CORN FLOUR

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Sugar syrup obtained by dextrinization of starch in corn flour (22% solids W/W) by α -amylase at concentration of 12 KNU and 24 KNU for 100 g suspension had 56 and 61 DE respectively. As the corn flour was suspended in tap water containing Ca, addition of calcium acetate to the corn flour suspension did not improve the hydrolysis of starch. As total solid suspension of 22% (W/W) was very viscous, no further increase in dry solids was possible without decreasing its viscosity. Hence the addition of corn flour (dry) or corn flour suspension to increase the total solids from 22% (W/W) to final concentrations ranging from 25 to 30% (W/W) was only done as the liquefaction proceeded with the concomitant decrease in viscosity. When corn flour (10 g) corn flour suspension (30g of 33% W/W) or corn flour suspension (40g of 66% W/W) was added to the liquefying starch (22% W/W), sugar syrup obtained at 3h had 50, 60 and 36 DE respectively and the percentage of starch hydrolysed was 72.4, 80.5 and 48.4% respectively. As α -amylase cannot completely hydrolyse starch to glucose or maltose, malt extract rich in β -amylases was added to convert dextrins to maltose. Addition of corn malt extract to the liquefied starch preparations supplemented with either dry corn flour (10 g) or corn flour suspension (33% W/W) increased the DE from 50 and 60 to 62.2 in both respectively. In the next experiment malt powder suspension (25% W/W) equivalent to the malt extract of the previous experiment was added directly and the DE obtained were 57 and 55.2 respectively. These results indicate that glucose syrups of 50 to 70 DE can be prepared using α -amylase alone without the help of malt amylases.