

Popular science summary

Hard candy readily picks up moisture from the air, resulting in a soft and sticky texture causing an end of shelf life. This research investigates the influence of different sugar compositions on the moisture uptake of hard candy when exposed to a humid environment.

Five different hard candy recipes were exposed to a humid environment for 8 days, allowing the candy to change over time. Several measurements were performed during the 8-day storage experiment.

Formula 1 (9,8 DE) showed the most promising results based on reduced moisture uptake and increased stability, which indicates an extended shelf life. Formula 2 (13 DE) had almost the same effectiveness. In contrast, formula 4 (27 DE) showed the highest moisture uptake. A relation between moisture uptake and the sugar composition of the hard candy was observed. The moisture uptake of all recipes showed first an increase, indicating a rapid moisture uptake at the surface. Followed by a slower increase in moisture uptake due to the decreasing difference between the water activity of air and candy. Then, a steep increase in moisture uptake is observed which indicates a decreased viscosity. As moisture uptake increases with decreasing viscosity.

Further research is recommended to understand better the impact of different hard candy recipes regarding processability and physical characteristics such as hardness and sweetness. The low DE hard candy recipes, such as formula 1 (9.8 DE), might decrease the processability and sweetness and increase hardness which may be unacceptable to customers.