CARACTERIZATION OF SODIUM CASEINATE – LOCUST BEAN GUM CONJUGATES
OBTAINED FROM MAILLARD REACTION

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There are many applications in food engineering using protein-polysaccharide interactions. These natural biopolymers have shown synergistic effect as emulsifiers when applied in oil/water emulsions. This work focused on the interaction between sodium caseinate and locust bean gum (LBG) from covalent interaction via the Maillard reaction. Under controlled conditions, a conjugate is formed through this specific, strong and permanent binding. Casein is widely used in emulsions due to its high adsorption capability on the oil/water interface. Moreover, LBG is a neutral galactomannan, which has long chain and high molecular weight in the order of $10^3$ kDa. This gum can form viscous solutions even at low concentrations, avoiding the phase separation by steric hindrance in emulsions. Maillard conjugates were produced at pH 7, 50°C, 79% relative humidity, during 0h (control), 6h, 12h, 24h, 36h and 48h. Molecular weight was monitored by SDS-polyacrylamide gel electrophoresis (PAGE). Higher molecular weight bands were observed at 48h, although lower molecular weight bands related to casein did not decrease. The measurement of ζ-potential at different reaction times resulted in isoelectric point ranging from 3.8 to 4.5. The color analysis was also used to evaluate conjugates formation, indicated by $b^*$ value. The $b^*$ values increased with the time, indicating the development of yellow color and confirming the Maillard reaction. Finally, emulsions prepared with 48h-conjugate were the most stable probably due to the higher number of conjugates.