EVALUATION OF THE USE OF GLYCEROL IN THE FORMULATION OF ZEIN FILMS

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The zein, protein found in the maize, has thermoplastic properties. Insoluble in water, but soluble in alcoholic solution (ethanol 60 - 95%). Films obtained from such protein serve as a barrier to oxygen and moisture due to its hydrophobic character. However, these films tend to be brittle, making necessary the use of plasticizers to improve their physical and mechanical properties. This study aimed to evaluate the use of glycerol as a plasticizer in the preparation of zein films based on the *casting* process. Different combinations were performed with commercial zein (1.0g and 2.0g), ethanol 70% or ethanol 95% (3.0mL to 25.0mL), glycerol (0.3g, 0.6g, 1.17g, 2.0g, 3.0g and 3.5g) and an emulsifier (0.5g and 1.0g). Subjective and thickness (µm) analysis were done. Formulations that had films with better subjective analysis would used in subsequent tests. It was found that by decreasing the volume of ethanol 70% maintaining the amount of glycerol and protein there was a tendency of the medium saturation and phase separation, getting the film more brittle. Furthermore, the combination of ethanol 95%-glycerol provided weaker films than the combination of ethanol 70%-glycerol. Virtually all films had a certain oiliness. Was chosen formulations that used emulsifier and ethanol 70% for further tests, because, apparently, the emulsifier provided films more homogeneous. Formulations that showed better results had thickness of 398µm, 287µm, 270µm and 253µm. In these formulations were also carried color and contact angle analysis. More studies will be performed aiming to improve the visual aspect of the films.

Financial support: FAPEMIG, CNPQ, PIBIC-UFSJ.