Microencapsulation of H. pluvialis oleoresins with different fatty acid composition: Kinetic stability of astaxanthin and alpha-tocopherol

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 Haematococcus pluvialis is a natural source of astaxanthin (AX). However, AX loses its natural protection when extracted from this microalga. In this study, a supercritical fluid extract (SFE) of H. pluvialis was obtained and added to oils with different fatty acid compositions (sunflower oil (SO) or high oleic sunflower oil (HOSO)). The oleoresins of H. pluvialis ((SO+SFE) and (HOSO+SFE)) were encapsulated with Capsul by spray drying. The stability of the oleoresins and powders were studied at 40, 50 and 70 °C. AX and alpha-tocopherol (AT) degradation followed a zero-order and first-order kinetic model, respectively, for all systems. The encapsulation of oleoresins improved the stability of AX and AT to a greater extent in oleoresins with a monounsaturated fatty acid profile, as shown by the significantly lowest degradation rate constants and longest half-lives. Therefore, the encapsulation of H. pluvialis oleoresins is an alternative to deve