Protection of astaxanthin in astaxanthin nanodispersions using additional antioxidants.

ABSTRACT

The protective effects of α-tocopherol and ascorbic acid on astaxanthin in astaxanthin nanodispersions produced via a solvent-diffusion technique and stabilized by a three-component stabilizer system, were studied either individually or in combination by using response surface methodology. Generally, both α-tocopherol and ascorbic acid could retard the astaxanthin degradation in astaxanthin nanodispersions. The results showed that the using α-tocopherol and ascorbic acid can be more efficient in increasing the chemical stability of nanodispersions in comparison to using them individually. Using a response surface methodology (RSM) response optimizer, it was seen that addition of ascorbic acid (ascorbic acid/astaxanthin w/w) and α-tocopherol (α-tocopherol/astaxanthin w/w) in proportions of 0.4 and 0.6, respectively, would give the maximum chemical stability to the studied astaxanthin nanodispersions.

Keyword: Astaxanthin nanodispersions; Chemical stability; Ascorbic acid; α-tocopherol.