

Effect of N-acetylcysteine amide on oil oxidation

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N-acetylcysteine amide (NACA) that contains an amide group in the carboxyl group is the chemically modified form of N-acetylcysteine (NAC). This modification brings in higher liposolubility and therefore higher permeability through cellular membranes. Thus NACA is a good antioxidant for biological systems. However there is no data available for the antioxidant action of NACA in edible oils. In this study NACA, NAC and a standard antioxidant butylated hydroxytoluene (BHT) were compared for their antioxidant efficiency on oxidation of sunflower oil. Different concentrations of these antioxidants added to stripped oil and oxidative deterioration indicators were monitored by thiocyanate, thiobarbituric acid reactive substances (TBARS) and Rancimat tests. It was observed that NACA had stronger antioxidant power compared to NAC in all concentrations tested. Even 5 mg kg⁻¹ concentration of NACA showed higher protective effect on oil oxidation compared to 50-100 mg kg⁻¹ of NAC. Antioxidant efficiency of NACA increased with the increasing concentration up to 50 mg kg⁻¹. However 100 mg kg⁻¹ of NACA showed lower antioxidant effect compared to 50 mg kg⁻¹ probably due to dose dependent pro-oxidant behavior. Comparable results obtained from 50 mg kg⁻¹ of NACA with 25 mg kg⁻¹ of BHT in oven test whereas NACA showed higher results in Rancimat test.