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Effects of Drying Conditions on the Oxidation of Linoleic Acid Encapsulated with Gum Arabic by Spray-drying

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Linoleic acid was microencapsulated with gum arabic using a spray-drier with a centrifugal atomizer. The oxidation process of encapsulated linoleic acid was observed at various temperatures and at different relative humidities. The inlet-air temperature of the dryer was found to have no significant effect on the Sauter mean diameter or moisture content of the microcapsules ; hence, the oxidation process of encapsulated linoleic acid was unaffected by the inlet-air temperature. However, the rotational speed of the atomizer did affect the size and moisture content of the microcapsules, which were found to be larger and higher, respectively, for microcapsules prepared at the lower rotational speed. The oxidation of linoleic acid in larger microcapsules proceeded more slowly. In addition, oxidation progressed more quickly at a higher relative humidity, and it was suggested that the glass transition of the wall material might affect the progress of oxidation. The oxidation process was analyzed based on the Weibull equation, and the rate and shape constants were evaluated. Relative humidity was found to have little effect on the activation energy of oxidation during storage of the microcapsules.

Keywords: [lipid oxidation](#), [spray-drying](#), [microcapsule](#), [glass transition](#)



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