SECTION I
INTRODUCTION

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Chapter 1. Rationale and Significance

The quality of many beverages and food products are compromised by the presence of low molecular weight aldehydes. Aldehydes are commonly formed during storage by the oxidation of lipids. For example, dairy products are susceptible to lipid oxidation initiated by both metal catalysts (autoxidation) or radiant energy (photo-induced oxidation). Milk products contain the necessary chemical precursors, processing conditions, and storage conditions needed for the formation of hydroperoxides which readily degrade to many volatile and non-volatile products, the most important being aliphatic aldehydes.

The migration of aldehydes, in particular acetaldehyde, from a food container into a beverage is a well documented problem. The presence of acetaldeyde and other aldehyde migrants negatively impacts the flavor of many beverages. Flavor sensitive beverages such as milk, beer, and water are particularly affected by this phenomenon. The use of an active packaging system that selectively removes deleterious aldehyde compounds may maintain the flavor profile of many beverage products and ultimately extend the shelf-life of these products.