

The food-canning industry in Indonesia: need for safety assurance regulation and quality optimisation

Purwiyatno Hariyadi

Southeast Asian Food and Agricultural Science and Technology (SEAFAST), Center/Department of Food Science and Technology, Bogor Agricultural University, Bogor, Indonesia

Abstract

The food-canning industry in Indonesia is one of the most important agro-based industries. Especially popular for processing and preserving fish (seafood), meat and horticultural products, the food-canning industry has contributed significantly to Indonesia's national economy. To assess the safety aspects of commercial sterilisation processing practices, we have evaluated the sterilising value (F_0 -value) for selected canned foods produced by the Indonesian food industry. The method for sterilisation evaluation was adopted from the guidelines of the Institute for Thermal Processing Specialists. Our results indicated that not all scheduled processes have been evaluated properly. Based on the calculated F_0 -value, most low-acid canned foods produced by the food-canning industry in Indonesia are adequately heat processed or even tend to be over processed. Sterilisation values, expressed as F_0 -values were found in the range 1.9 to 148.4. It is suggested that, especially with respect to thermal processing, there is a great need for food safety assurance and quality optimisation.

1. Introduction

The canning industry is of great importance to Indonesia as it directly employs many thousands of people, mainly in rural areas. As one of the most important agro-based industries, this industry in Indonesia has contributed significantly to the national economy. There are many products involved in food canning, e.g. canned fish/seafood, desserts, meat product, pasta and noodles, fruits and ready meals, and vegetables. The growth rate of the food-canning industry in Indonesia was reported to be about 3.1% between 2001 and 2005.

Canned fish/seafood is still the most popular type of canned food in Indonesia at almost 57% volume share with 19 620 tons of retail sales in 2003. The value and volume of canned fish and seafood (retail sales) in Indonesia have increased as shown in Table 1. According to USDA (2005), for the year of 2002-2003, the volume growth of canned fish and seafoods was 9%, with value growth also of 9%. Furthermore, it was estimated by the Global Agriculture Information Network (GAIN) that total volume growth for the period 2003 to 2008 was 81%, with total value growth for the same period of 35.6%.

Canning, especially of low acid foods, is designed to produce commercially sterile food products. Commercial

sterility has been defined as the condition, achieved by the application of heat alone or in combination with other treatments, in which a food is free from viable forms of microorganisms, including spores, capable of growing in the food at temperatures at which the food is designed normally to be held during distribution and storage.

Assuring the desired level of commercial sterility of low-acid canned foods is a great public health concern. Low-acid canned foods are canned foods that have a pH greater than 4.6 and water activity (a_w) greater than 0.85 and are traditionally a non-refrigerated product. Due to their pH and a_w characteristics, Low-acid canned foods are categorised as high-risk foods, which means that when canned the conditions may be able to support the growth of many kinds of microorganisms including heat-resistant spore-forming pathogens such as *Clostridium botulinum*.

2. Objective

The objective of this study was to assess the quality and safety of commercially sterile Low-acid canned foods produced by Indonesian food-canning establishments (FCEs), based on the minimum sterilising value (F_0).

3. Methodology

The study was undertaken by surveying the thermal processing adequacy of commercially sterile Low-acid canned foods produced by the food-canning industry in Indonesia.