

Detection of Vegetable Oils in Dairy Products Using the Polymerase Chain Reaction Technique

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Milk and its products have been among the most important foodstuffs providing human needs since thousands years ago, which, in addition to having a high nutritional value, plays a significant role in preventing many diseases (1). Moreover, children, pregnant women, lactating women, and the elderly are the main consumer group of dairy products (2). The high nutritional value of milk has led to its high consumption throughout the world; however, increasing demand has made the food prone to fraud (3). One of the most common frauds is replacing a part of its fat with lower-priced vegetable or animal fats with the aim of increasing the profitability of products. In general, milk fat consists of 98%

triacylglycerol, 2% other fatty acids, such as diacylglycerol, monoacylglycerol, free fatty acids, phospholipid, cholesterol, lipid soluble vitamins, and essential fatty acids. Therefore, the food containing this substitute is not only economically a type of fraud, but may also threaten human health (4, 3). Besides, any milk quality reduction can seriously threaten the health of sensitive consumer groups (5). Recently, the use of vegetable oils, especially Palm in the dairy industry has become one of the main concerns of the consumers. Therefore, people prefer to consume traditional dairy products which endanger public health (3). Milk is a rich source of protein, sugars, salts, and vitamins and has high levels of water; therefore, it has a high potential for the growth of bacteria. If it does not comply with health rules, it can act as an important factor to cause food poisoning and gastrointestinal disorders. It is worth mentioning that many infectious diseases, such as tuberculosis, brucellosis, typhoid, streptococcal infections, etc are transmitted through milk (7, 6). Sometimes the speed of fraud is surpassed by the speed of fraud analysis science. Therefore, the use of the polymerase chain reaction as a golden standard and a highly sensitive test can be a useful tool for detecting fraud and identifying the origin of imported oils in dairy products (8). Accordingly, it is suggested to use polymerase chain reaction test (PCR) in the food quality control labs routinely to prevent endangering public health and to ensure that the consumers have accurate information on the products.

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