**Exploring the dynamics of some pathogenic bacteria during apple cider vinegar production**

Fatemeh Tahouneh1, Rasoul Shafiei\*1

1-Department of Cell and Molecular Biology and Microbiology, Facullty of Biological Sciences and Technology, University of Isfahan, Iran.

E-mail address: R.shafiei@sci.ui.ac.ir

**‌ Statement of Problem:** In Iran, a large quantity of apple cider vinegar is produced annually by traditional methods, however, the presence of some important pathogenic bacteria such as spore-forming bacteria and Enterobacteriaceae during different production steps has not been investigated yet. In addition, there is still no deep insight into the effect of physicochemical conditions on the dynamics of pathogenic bacteria during apple cider vinegar production.

**Research Purpose:** In Iran, a large quantity of apple cider vinegar is produced annually by traditional methods, however, the presence of some important pathogenic bacteria such as spore-forming bacteria and Enterobacteriaceae during different production steps has not been investigated yet. In addition, there is still no deep insight into the effect of physicochemical conditions on the dynamics of pathogenic bacteria during apple cider vinegar production.

**Research Method:** In this research, we produced apple cider vinegar under controlled conditions at 30ºC. In addition, good manufacturing practice (GMP) was used. At certain intervals of time, samples were collected under aseptic conditions. Then, the most probable number of coliforms was determined by various culture media.

**Results and Conclusion.** Based on the obtained results, it was revealed that coliforms are just present during the first step of fermentation. During the first month, Klebsiella spp. and Citrobacter spp. were detectable by MPN method. However, the number of these bacteria abruptly decresed after 45 days. It seemms the pH drop and increase in total organic acid concetration may cause the death of coliforms.

**Keywords:** Apple cider vinegar, Enterobacteriaceae, Microbiota, Population dynamics