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Bacteriological quality trend of bottled water in Northern Greece

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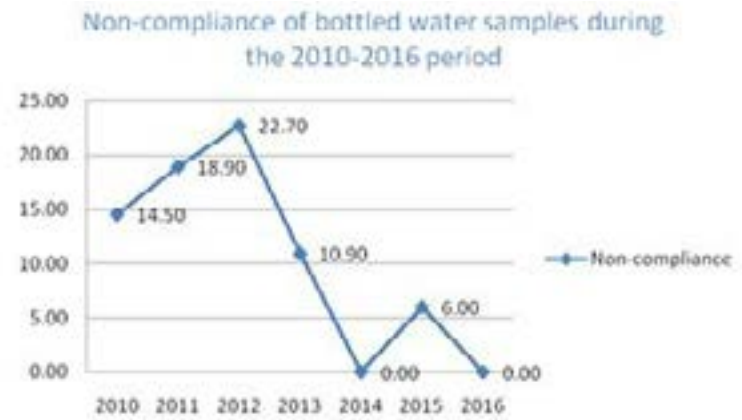
Bottled water has been associated with outbreaks of infection both in healthy and immunocompromised individuals, in hospitals and the community. The aim of this study is the assessment of the microbiological quality of non-carbonated bottled water sold in northern Greece and their diachronic quality trend. 420 samples (55.0% mineral and 45.0% table water, 92.0% domestic and 8.0% imported brands) were examined for pollution indicator bacteria. Standard methods were applied for the identification and enumeration of total coliforms, *Escherichia coli, Enterococcus spp., Pseudomonas aeruginosa*, spore-forming sulfite-reducing anaerobes (mainly Clostridia) and heterotrophic plate count. Out of 420 samples 16.0% did not meet the European Union criteria (2009/54/EC) because of the presence of any of total coliforms, *P. aeruginosa* or *Enterococcus spp*. These microorganisms were detected in 3.1%, 9.3% and 1.2% of the samples respectively. Data analysis was performed using statistical package IBM SPSS 22.0. Statistical comparisons were carried out among companies, geographic origin, year and season of examination. The study shows an important improvement of the bottled water quality through the years. Also, a statistically significant difference was observed in compliance among companies, geographic origin, seasons and between domestic as well imported brands. The bottling industry is in great growth during the last decades and the present study is the only one concerning evaluation of bottled water quality in northern Greece. The study shows constant presence of indicators in some bottled waters and may be of help to the bottling companies to increase the water quality. The detection of bacterial burden in bottled waters indicates the need for systematic and strict controls, not only in the bottling industry but also during their storage and maintenance at market settings. There is an obvious need for rigorous epidemiological inspection and follow up of bottling factories for the prevention of waterborne diseases.



Biography

Malamatenia Arvanitidou is Professor and Director of the Laboratory of Public Health & Epidemiology, Medical School, Aristotle University of Thessaloniki in Greece that specializes in water microbiology (accredited according to ISO 17025), serves as a Reference Center for potable and recreational waters and acts in part of the Ministry of Health of Greece. She teaches Public Health, Social Medicine and Medical Statistics for Undergraduate and Postgraduate students of the Faculty of Health Sciences. She has published more than 100 articles in scientific journals with more than 1400 citations and participated in numerous studies. She has been a reviewer of various journals. She has organized or participated in organizing committees of several conferences and symposia.

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