

## *Molecular diagnostic technique for detection of common foodborne pathogens: Focus on food from different restaurants in Lebanon*

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### *Abstract*

Foodborne diseases have emerged as an important and growing public health and economic problem in many countries during the last decades especially in Lebanon. In this study, we conducted a food control program for full service restaurants in Keserwan district, based on main headings of food safety practices and bacteriological testing, to serve as a model for other regions in Lebanon. In fact, 175 samples of raw and ready-to-eat foods were collected from 83 restaurants that received certificates of qualification from the Lebanese Ministry of Public Health ("Gold" certificate or "Silver" certificate) to assess microbiological quality of these foods and to detect the presence of *Clostridium perfringens*, *Escherichia coli*, *Listeria*, *Salmonella* and *Staphylococcus aureus*, or even the contamination of these foods, by means of two methods: the conventional microbiological culture and the technique of molecular biology the real-time PCR; the latter proved effectiveness and allowed us to obtain quickly very precise results. These results showed unsatisfactory levels of foodborne pathogens. Then, statistical analyzes were carried out to find the possible associations between the various categorical variables. The presence of bacteria was not significantly associated with the obtained certificate. These findings reveal the microbiological quality of foods served in Keserwan district restaurants and thus encourage improved practices to provide consumers healthy food products.



### *Biography:*

Lara Hanna-Wakim is the Vice-Director for the Higher Center for Research at the Holy Spirit University of Kaslik (USEK), Lebanon since September 2019. She served as Dean of the Faculty of Agricultural and Food Sciences at USEK from 2013-2019. She was the first scientist to represent the MENA Region at the Governing Council of the International Union of Food Science and Technology (IUFoST) from 2014-2018. Dr. Hanna-Wakim was the Vice-President of the Global Confederation of Higher Education Associations in Agriculture and Life Sciences (GCHERA) in 2015, and is currently serving as Senior International Officer (SIO) at the Academy of Leaders in International Higher Education (AIEA), Duke University, North

Carolina, USA. Dr. Hanna-Wakim holds a PhD in Food Process Engineering from AgroParis Tech (Paris, France), an MS in Quality Assurance from INAP-G (Paris, France), an Agricultural Engineering Diploma from USEK (Lebanon), an MS in Teaching and Learning in Higher Education from Norwich University (USA) and an MA/PG Diploma in Learning and Teaching in Higher Education from University of Chester (UK).

### *Speaker Publications:*

1. Harb, C., Mouannes, E., Bou Zeidan, M., Abdel Nour, A. and Hanna-Wakim, L. (2020). Foodborne Pathogens Dilemma in the Mediterranean Diet: Case of Lebanon. Trends in Food Science and Technology. Journal of Food Processing & Technology, Vol.11 Iss.7 No: 832. DOI: 2157-7110.20.11.832.
2. Hanna-Wakim, L., Abdel Nour, A., Attieh, R. and Harb, C. (2020). Detection and quantification of *Clostridium perfringens*, *Escherichia coli*, *Listeria monocytogenes*, *Salmonella*, and *Staphylococcus aureus* in food samples from different restaurants in Lebanon using conventional microbiological cultures and real-time PCR methods. Food Control. Journal of Food Safety (In Press).
3. Qureshi, M.Z., Attar, R., Romero, M.A., Hanna-Wakim, L., Yelekenova, A.B., Farooqi, A.A. (2019). Regulation of signaling pathways by  $\beta$ -elemene in cancer progression and metastasis. Journal of Cellular Biochemistry 120 (3).
4. Zalaket, J., Matta, J., Hanna-Wakim, L. (2019). Development, validity, and reproducibility of a semi quantitative food frequency questionnaire for the assessment of antioxidant vitamins intake in Lebanon. Nutrition 58. DOI: 10.1016/j.nut.2018.06.014
5. Ozbey, U., Attar, R., Romero, M.A., Hanna-Wakim, L., Ozelik, B., Farooqi, A.A. (2019). Apigenin as an effective anticancer natural product: Spotlight on TRAIL, WNT/ $\beta$ -catenin, JAK-STAT pathways, and microRNAs. Journal of Cellular Biochemistry 120 (6).

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