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The chemical behavior of stainless steel during cooking and storage of vegetables

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Stainless steel is probably the most material that is used in cookware. Stainless steel can be a potential source of risk for metal leaching during cooking and storage of food. Stainless steel grade 201 is the most popular and economical cookware commonly found in most Egyptian markets. Three techniques for analysis are used to investigate the behavior of stainless steel in different media, namely, weight loss, atomic absorption and two electrochemical techniques; the potentiodynamic polarization Tafel line and electrochemical impedance spectroscopy (EIS). Nickel, chrome, and iron are analyzed by spectrophotometry in cooked vegetables such as eggplant, cauliflower, and potatoes in stainless steel cookware. Moreover, the concentration of these metals during cooking are determined in vegetables cooked in a glass pan, which is served as a blank background or control and compared to cooking in stainless steel. Results obtained in this study further revealed that, the cooked vegetable in stainless steel cookware can leach quantities of metals (Cr, Ni and Fe) into food during processed and storage of food. The analytical results show that the metals intake from Ni, Cr and Fe are recorded for e.g. potatoes cooked and after cooked and stored for five days are 2.265, 1.354 and 50.97 mg/person, respectively. The general results show that iron is found in high level whereas concentration of Ni is above their recommended safe acceptable level set by WHO.

Biography

Ali Korin is an Assistant Lecturer at the Al-Azhar University. He received his MSc in Food Science from the Faculty of Agriculture in 2015. His specialization is in Food Science and Technology as well as Food Chemistry. His research deals with metal leaching from cookware into food. He is interested in using edible films and probiotics for bakery products.

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