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Dietary exposure to penicillin residues through red meat and meat products consumption in Lebanon

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The misuse and abuse of antimicrobial in animal production and human prescription have become major concerns. The aim of this research is to assess the dietary exposure of the Lebanese consumers to antibiotic residues from the consumption of meat and compare it to that from antibiotic intake. A cross sectional study recruited 500 participants living in Mount-Lebanon, using an interviewer-based questionnaire. Beef meat samples (n=61) were collected and analyzed for penicillin residues using ELISA and HPLC. Analyses were performed using SPSS, version 20. Comparisons of continuous and categorical variables were performed using independent samples t-test (or ANOVA) and the chi square test, respectively. A p-value<0.05 was considered statistically significant. The dietary exposure assessment was calculated following the tiered assessment approach. The mean daily meat consumption from beef was 191.5 \pm 1.2 g/day. None of the meat samples had a penicillin concentration above the maximum residue level, while 21% tested positive. The estimated dietary exposure was 0.8 µg/person/d which accounts for 2.8% of the acceptable dietary intake. Most of the participants (66.4%) reported using antibiotic drugs more than once per year and 20.8% reported having side effects after use. It is suggested that most of the Lebanese consumers are not at high risk of exposure to penicillin residues from meat consumption but could be more at risk from arbitrary intake of antibiotic medication. Updated regulation of antibiotics uses and sale and creation of greater awareness among the Lebanese population are therefore recommended.

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