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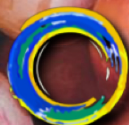
The role of microbiological criteria for foodstuffs (GSO 1016/2015) in controlling *E. coli* O157 in local and imported meat and other food matrix in Saudi Arabia as part of Gulf Cooperation Council with summery of *E. coli* STEC outbreaks 1982-2024

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STEC causes hemolytic uremic syndrome (HUS) to human and normally associated with consumed food, particularly undercooked meat. Many countries have established microbiological criteria applied by food law to test and control the consumption of food matrix against foodborne pathogens especially the most well-known strain of STEC, *E. coli* O157. However, some other countries did not include *E. coli* O157 and other important pathogens in their microbiological criteria which may lead to serious outbreaks. This study is aiming to firstly, list *E. coli* STEC outbreak worldwide occurring since its discovery in 1982 and secondly, identify a relationship between food outbreaks and lack in food microbiological criteria. Twenty microbiological criteria were intensively investigated. Those criteria are currently applied in fifty-three counties. According to this study approximately only one third of food worldwide is controlled by microbiological criteria. A number of foodborne outbreaks worldwide were positively or negatively linked to microbiological criteria. Since 1982 and 1984, respectively, both O157 and non-O157 STEC have been implicated in outbreaks. Over 1,345 outbreaks affecting more than 39,164 individuals across 4 continents and over 30 countries have been documented due to STEC serotypes infections. According to Ota et al. (2019), the largest STEC outbreak ever recorded is occurred by O157 during 1996 in Sakai, Japan which effect approximately over 8000 individuals. Based on our data, the second largest outbreak of STEC was caused by O104:H4 which effected over 4000 individuals, 22 % of those developed HUS. Most STEC outbreaks worldwide are caused by mainly consuming food especially meat and green leaves. Furthermore, different serotypes of STEC show an ability to adapt in other environments such as, water, person-to-person and animal contacts. Out of the microbiological criteria tested in this study, fifteen (75%) applied *E. coli* O157 test to at least one food matrix related to meat products but not the rest. All the evaluated microbiological criteria (100%) accepted prevalence of *E. coli* in two out of five replicates of tested food samples with maximum of 5x10 colony forming unit (CFU) (with not further serotype identification). For example, Brazil and India' microbiological criteria do not require testing *E. coli* O157 in food matrix. Brazil and India are one of the biggest meat importers to Saudi Arabia market. According to the Saudi Food and Drug Authority (SFDA), at least 6% of tested meat imported from Brazil and India are infected with *E. coli* O157. This is probably due to the lack of Brazil and India' microbiological criteria in testing *E. coli* O157 in food matrix before export. There is a possible link between absence of testing *E. coli* O157 in microbiological criteria and existence of the same pathogen in food matrix that publicly available for consumption.

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