ABSTRACT

BACKGROUND: In Kenya, the extensive use of agrochemicals in fruits and vegetable farming raises concerns about pesticide residues in agricultural products including tomato fruits. There are still a number of highly hazardous pesticides including man-cozeb, glyphosate acid, chlorpyrifos, acephate and cypermethrin amongst many others that are still used in Kenya despite being banned in Europe due to harmful effects on humans and other animals. This study aimed to evaluate the residual levels of cypermethrin pesticide in locally produced tomato in Laikipia County, Kenya. Also, the study identified some practices that lead to pesticide residual levels in tomatoes. A total of 82 tomato samples were analyzed for pesticide residues following extraction using QuEChERS method and analyzed for the presence of synthetic pyrethroids (cis- and trans-alpha-cypermethrins) pesticides using gas chromatography–mass spectrometry (GC–MS).

RESULTS: The results indicated that 58.54% of tomato samples showed the presence of residues of both pesticides, with non eexceeding maximum residue levels (MRLs). The mean residues concentration for trans-alpha-cypermethrin was 23.82, 11.84and 11.12 ppm in north, east and west Laikipia sub-counties respectively. While that for cis-alpha-cypermethrin was 13.58, 5.63 and 4.62 ppm in north, west and east Laikipia respectively.

CONCLUSIONS: Despite tested pesticide levels in tomatoes being within legal limits, their frequent detection is concerning due to tomatoes being eaten raw. This indicates a potential health risk and highlights the need for farmer training on the banned pesticide cypermethrin and expanded future research.