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QUANTIFICATION OF ORGANOPHOSPHORUS PESTICIDES RESIDUES COW'S MILK COLLECTED FROM NUWARA ELIYA DISTRICT

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Nuwara Eliya district is the leading milk producer in Sri Lanka. Milk can be contaminated with pesticide residues through the feed and water sources. Thirty two milk samples were collected from milk collecting centers in 5 DS divisions of Nuwara Eliya district, during January 2016 to January 2017 and analyzed for the residues of organophosphorus pesticide (OPPs). The transfer of OPPs to dairy cow's milk when fed with feed and water were assessed in this study. Sixty feed samples (vegetable residues and grasses) and 15 water samples were collected from various dairy farms. Milk samples were analyzed by the multi-residues analytical method DFG S-9 for pesticide contamination. Feed samples were extracted with acids using QuEChERS method. Pesticides residues were analyzed using GC-MS. The results showed that mean of all milk samples had greater content of profenofos (0.0938 ± 0.02 ppm), chlorpyrifos (0.0132 ± 0.0028 ppm) and prothiofos (0.0516 ± 0.0016 ppm) than their maximum residue limits published by World Health Organization (WHO). Chlorpyrifos and diazinon were detected in all feed samples with the mean values of 0.046 and 0.011 ppm, respectively. In addition, 68% of feed samples contaminated prothiofos (0.064 ppm) and profenofos (0.1114 ppm) at concentrations greater than their maximum residue limits of WHO. However, organophosphorus pesticide residues were found below the WHO permissible limit in analyzed water samples.

Keywords: *Organophosphorus pesticide residues; cow's milk; cattle feed; water; risk assessment*

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