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Pesticide residues in raw and processed maize grains and flour from selected areas in Dar es Salaam and Ruvuma, Tanzania

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HIGHLIGHTS

- Pesticide residues were determined in maize grains and flour samples in Tanzania.
- Pesticide residues were high in raw samples, but they hardly existed in cooked samples.
- Processing methods caused transformation and reduction of the pesticide residues.
- Organochlorine residues showed contamination by environmental sources and recent use.

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ABSTRACT

This study investigated the levels of pesticide residues in maize grains and flour and the effects of processing methods on their levels in maize products in samples collected in Dar es Salaam and Ruvuma regions. Analysis of cleaned-up extracts was done using gas chromatography-mass spectrometry (GC-MS). Twelve pesticides were detected in maize grains and their highest concentrations were up to 676.1, 11200 and 14 μg/kg for organochlorines, organophosphorous and pyrethroid pesticides, respectively. In maize flour, eight pesticides were detected and the concentrations for organochlorines, organophosphorous and pyrethroid pesticides were up to 333.3, 2220 and 2 μg/kg, respectively. Only dieldrin was detected in cooked samples at a concentration of 2 μg/kg. The concentrations of *p,p'*-DDD, aldrin, dieldrin, chlorpyrifos and pirimiphos methyl in some grains and flour samples exceeded the maximum residue limit (MRLs). The findings indicate risks and concerns for public health. Processing methods were found to cause transformation and reduction of the pesticides.

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