Title	Residue levels of malathion and fenitrothion and their metabolites in postharvest treated barley during storage and malting
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Citation	Food Chemistry, Volume 100, Issue 3 , 2007, Pages 1165-1169
Keywords	Malathion; Malaoxon; Isomalathion; Fenitrothion; Fenitroxon; Barley; Malt

Abstract

In order to investigate residue levels of malathion and fenitrothion and their metabolites (malaoxon, isomalathion and fenitrooxon) during storage and malting, pesticide-free barley was treated with these insecticides. Barley was placed in a sealed plastic container and treated with a dust of malathion (2%). Fenitrothion emulsion (41.6% wettable powder) was applied onto the walls of a small-scale storage vessel. Residues were determined in barley at about 1-month intervals during storage and in malt produced from the barley stored at various times. The analysis of the residues was carried out by GC equipped with a nitrogen-phosphorus detector (NPD). Although the approved doses of insecticides for stored grain were used, the residue levels exceeded the maximum residue limits (MRLs) at the beginning of storage. While the degradation of malathion and isomalathion in barley was observed to be about 65–72% during the storage period, the malaoxon was degraded extensively (85%). A significant percentage of fenitrothion residues (80%) were dissipated from grains for the short-term storage probably because of hot weather conditions. In malt, rates of degradation and volatilisation of the residues increased by the heat involved in malting. The carryover of the residues from barley into malt was also found to be dependent on the log P_{ow} (partition coefficient between *n*-octanol and water) values of the insecticides.