

## Determination of Dithiocarbamates in Food by UPLC-MS/MS

Dithiocarbamates are a group of pesticides used as fungicides. The main ones are Maneb, Mancozeb, Metiram, Propineb, Thiram, Ziram, and Zineb divided into three subclasses:

- Dimethyldithiocarbamates (DMDCs)
- Ethylenebisdithiocarbamates (EBDCs)
- Propylenebisdithiocarbamates (PBCDs)

The population may be exposed due to occasional residues in food; these substances can be absorbed by the skin, mucous membranes and both the respiratory and gastrointestinal tracts and their metabolic products as carbon disulfide (CS<sub>2</sub>) and ethylene thiourea (ETU) can be found in the liver, thyroid gland and even in kidneys, and their accumulation can have harmful effects on human health.

**Commission Regulation (EU) 396/2005** sets maximum residue levels for most of Dithiocarbamates (expressed as CS<sub>2</sub>).

For details, please see the Annex to Regulation (EC) No 396/2005 as amended, at the following link:

[https://publications.europa.eu/resource/cellar/44f0550d-7346-11ee-9220-01aa75ed71a1.0007.02/DOC\\_1](https://publications.europa.eu/resource/cellar/44f0550d-7346-11ee-9220-01aa75ed71a1.0007.02/DOC_1)

### NEOTRON PROPOSAL

Neotron is already able to detect the presence of CS<sub>2</sub> as a Dithiocarbamates marker using a GC-MSMS method, but the presence of this molecule could be due to the natural presence of sulfur in some products (e.g. garlic, onion, Brassicaceae). Given that, there is the risk of obtaining false positives.



Neotron developed a new UPLC-MSMS method (ultrahigh performance liquid chromatography coupled with a triple quadrupole) that allows the three subclasses of dithiocarbamates to be directly determined. This technique can be used as a confirmatory test to exclude false positives.

Contact us to receive your dedicated offer and more information.

Neotron, part of the Cotecna Group, is a global player in analytical services on food and feed products, supplements, materials in contact with food (FCM), cosmetics, and pharmaceutical products.



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### References:

1. Commission Regulation (EC) No 396/2005 of the European Parliament and of the Council of 23 February 2005 on maximum residue levels of pesticides in or on food and feed of plant and animal origin and amending Council Directive 91/414/EEC
2. Pesticide Residues : Dithiocarbamates (F. Rubino, E. Mrema, C. Colosio). <https://hdl.handle.net/2434/234393>