MAIA Starter + Medium

ENGLISH

Reagents for MAIA Pesticide MultiTest

PRINCIPLE OF THE METHOD

The method of Acetylcholinesterase – *Microplate Acetylcholinesterase Inhibition Assay* (**MAIA**) – for the detection of organophosphate, organochloride and carbamate pesticides residues in hydro-acetonitrilic extracts of solid/liquid food matrices is based on testing in microtitre plates of Acetylcholinesterase (AChE) activity inhibition by pesticide molecules, that belong to 3 important families. It is a semiquantitative analytic method called *screening method*, or first level method. The AChE is preincubated with the desiccated extract to accentuate the pesticide's inhibition effect on AChE, if present in the food matrix in examination. Afterwards, the enzyme-extract system is integrated with an appropriate reaction substratum, the acetylthiocholine, and with a chromogenic detector for thiocoline that has developed. The reaction is stopped by a denaturant of the enzymatic protein. Proceed to **direct visual evaluation** by comparing the color in Sample wells with the Color Card included in the kit or with the color of the Control Columns (ref. 79703). The method makes a biological test in which the analyte pesticide is selectively intercepted because of its specific “noxious” action on a critical physiological event of the animal organism, the AChE activity in nervous and neuromuscular junctions.

KIT CONTENTS

- 10 vials of freeze-dried **MAIA *MEDIUM***, containing mammal AChE and a pH buffer;
- 10 vials of **MAIA *STARTER*** containing ATCI[1] and DTNB[2].

TEST PROCEDURE

Refer to the paragraph “Test Procedure” described in the pack insert of the MAIA Pesticide MultiTest (ref. 79700)

RECOMMENDATIONS

1. The desiccation time varies depending on laboratory temperature: 15' at 25 °C, 30' at 20 °C, 45' at 18 °C, roughly. Check the laboratory temperature is 18-25 °C during the desiccation. Do not extend the desiccation phase over necessary time.
2. The enzyme activity varies depending on laboratory temperature. Consequently, set incubation time of **STARTER** (chromogenic reaction) according to as follows: 8' at 25 °C, 10' at 20 °C, 12' at 18 °C.
3. Avoid foam while resuspending **MEDIUM** with water. Shake gently the vial by circular movements.
4. Check the sealing film adhesion on wells after the addition of the **MEDIUM solution**.
5. Avoid direct light on **STARTER solution** in basin and wells during the color development reaction.
6. The mixture of **STOPPER** with the incubated solution in wells must be completely carried through 2 successive aspirations and dispensations at least for each well. Change the multichannel pipette tips after the stop of each column.
7. Adjust the multichannel pipette volume before the phases: from **MEDIUM solution** to **STARTER solution**: 100 µL → 50 µL; from **STARTER solution** to **STOPPER**: 50 µL → 100 µL.

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1 *Acethylthiocholine iodide*

2 *5,5'-Dithiobis (2-nitrobenzoic acid)*

QUALITY CONTRO FOR THE USER

Every batch of **MAIA Pesticide MultiTest** is submitted to quality control. The user can test negative and positive control by using the Control Columns (ref. 79703) which contain pesticide-free dried milk, and milk fortified with Paraoxon (organophosphate) and Carbaryl (carbamate).

PRECAUTIONS

Reagent may contain some non-reactive and preservative components.
It is suggested to handle carefully it, avoiding contact with skin and swallow.
Perform the test according to the general Good Laboratory Practice guidelines (GLP).

STORAGE

Store at 2-8 °C in the original packaging. Keep away from sources of heat and avoid excessive changes in temperature.
In such conditions, the product will remain valid until the expiry date indicated on the label.
Do not use beyond that date. Eliminate without using if there are signs of deterioration.

WASTE DISPOSAL

Product is intended for professional laboratories.
Waste products must be handled as per relevant security cards and local regulations.

REFERENCES

- Anastassiades, M., S. J. Lehotay, D. Stajnbaher and F. J. Schenck. (2003). *Fast and easy multiresidue method employing acetonitrile extraction/partitioning and dispersive solid-phase extraction for the determination of pesticide residues in produce.* **Journal of AOAC International** 86(2), 412-31
- Ellman, G.L., K.D. Courtney, V. Andres, and R.M. Featherstone. (1961). *A new and rapid colorimetric determination of acetylcholinesterase activity*. **Biochem. Pharmacol.** 7, 88-95.
- Galgani, F:, and G. Bocquenne, (1989). *A method for routine detection of organophosphates and carbamates in sea water.* **Environm. Tech. Lett.** 10, 311-322.
- Mishra, N.N., J.A. Pedersen, and K.R. Rogers. (2001). *Highly sensitive assay for anticholinesterase compounds using 96 well plate format.* pp. 289-305. *In* Lipnick, R.L., R.P. Mason, M.L. Phillips, C.U. Pittnam, Jr. (eds.) Chemicals in the Environment: Fate, Impacts and Remediation, **ACS Symposium Series** No. 806; Oxford University Press: New York.
- Wilson, B.W, J.N. Seiber, M.E. Stelljes, J.D. Henderson, T.E. Archer, G.A. Pollock, and J.B..Knaak. (1989). *Bioassays for detection of aldicarb in watermelon.* **Bull. Environ. Contam. Toxicol.** 42, 159-166.

PRESENTATION

Product	REF	Kit contents
MAIA Starter + Medium	**79701**	10 MAIA *STARTER* vials 10 MAIA *MEDIUM* vials

TABLE OF SYMBOLS

Store away from light	Do not reuse	Manufacturer	Contents of the package	Temperature limitation
REF Catalogue number	Fragile, handle with care	Use by	Caution, consult accompanying documents	**LOT** Batch code

rev 0
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