ANALYTICAL EQUIPMENT

LUMEX

DETERMINATION OF THE **CARBENDAZIM** CONTENT IN ORANGE AND OTHER CITRUS JUICE PRODUCE

INTRODUCTION

Fungicide Carbendazim (Mercazole, Carbendazole) is widely used in agriculture to exterminate black mold (spot) on orange trees and treat fungus diseases of other fruit-bearing plants. According to the data of the World Health Organization, Carbendazim is toxic for liver, impacts reproductive system, and is considered to be a potentially cancerogenic compound. In most of the developed countries, the residual content of this fungicide is subject to national and international regulations. Researchers of LUMEX INSTRUMENTS, Ltd. have developed an analytical procedure for determination of the Carbendazim content in orange and other citrus juice produce using a capillary electrophoresis system CAPEL ®-105M.

MEASUREMENT METHOD

The method is based on extraction of Carbendazim from a sample and its quantitative determination by capillary electrophoresis using detection at a wavelength of 200 nm.

MEASUREMENT RANGE

The method is intended for measuring weight concentrations of Carbendazim from 0.01 mg/kg (10 ppb) with sample pre-concentration.

EQUIPMENT AND REAGENTS

The measurements are made using CAPEL®-105M capillary electrophoresis system. Data acquisition, processing and output are performed using a personal computer running under WINDOWS® 2000/7/XP operating system with installed dedicated software ELFORUN® for data acquisition and processing.

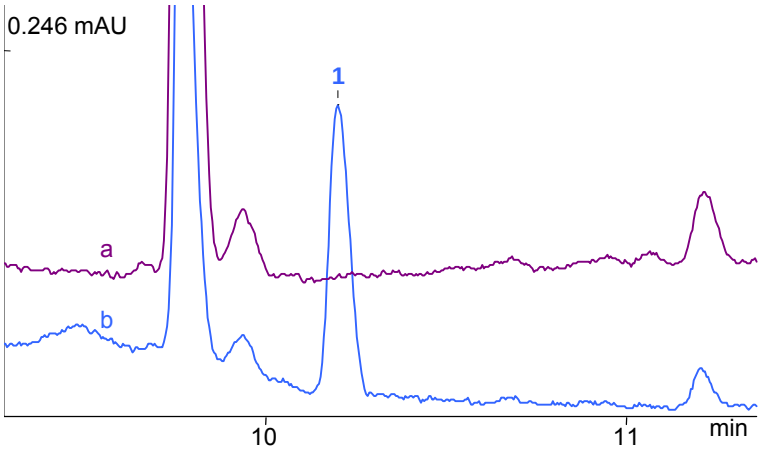
EXAMPLES OF REAL ANALYSES

Samples:

a – orange juice (reconstituted with pulp): the Carbendazim content is less than 0.01 mg/kg.

b – orange juice (reconstituted with pulp) with addition of 0.05 mg/kg Carbendazim

1 – Carbendazim



The CAPEL®-105M CE systems can also be used for determination of the following components governing quality and safety of the juice produce:

- citric, tartaric, malic, lactic, and other organic acids;
- *D*-isocitric acid;
- fructose, glucose, and saccharose;
- inorganic cations;
- hesperidine and naringine;
- benzoic and sorbic acids and their salts;
- potassium acetosulphamate and saccharine;
- synthetic food coloring agents.

The analytical procedures for determination of these components are certified and successfully used at food testing laboratories in Russia, CIS, EU, and Latin American countries.

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