

# Partnering Opportunity

Profile status : Archived

## Technology Offer

### Method for lead determination in food of plant origin using freeze-drying, ultrasound-assisted extraction and graphite furnace atomic absorption

#### Summary

*A Romanian research institute, specialized in the research and development of new methods in the analytical chemistry field, has developed a method for lead determination in the food of plant origin, with useful applications in the food quality and safety field. Currently, the method is under development/ lab testing. The institute is looking for partners such as food quality and safety, environmental and chemical partners to conclude technical cooperation agreements.*

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#### Details

##### Description

A team of Romanian researchers is specialized in the application of analytical chemistry in directions as environment and health. The Romanian research institute has a remarkable endowment that allows approaching projects from research to prototype stage realization and technology transfer.

Environmental contamination represents a particular danger and a major impediment to the development of sustainable societies, with direct negative consequences on the environmental quality and human health.

Alongside the air and water, food is essential environmental factors to all vital processes. The most common environmental contaminants are heavy metals and organic persistent pollutants; they are very persistent in the environment, bio-accumulative and toxic, even in small concentrations. According to the World Health Organization data, 25-30 % of human health disorders are consequences of the environmental quality negative influences. As a result, numerous studies regarding the determination of those contaminations from environmental and food samples were assessed, having major importance in planning and developing of the prevention activities.

Based on these findings, in order to respect food safety legislation, a careful analysis of these heavy metals is mandatory. In this context, the Romanian research institute has developed a method for the determination of lead (Pb, from the Latin plumbum) content in the food of plant origin (vegetables, cereals, teas) with applications in the food quality and safety field.

As compared to other existing conventional methods on the lead determination, the method developed by the Romanian institute allows the determination of lead in the food of plant origin at trace and ultra-trace level and consists of the following steps: freeze-drying (FD), sample weighting, ultrasound-assisted extraction (UAE) in diluted acids and determination of lead by graphite furnace atomic absorption (GF-AAS).

The current and potential domain of application of this method is monitoring the contamination in the food of plant origin by lead.

The Romanian research institute is looking for partners abroad such as environmental and chemical SMEs or large companies, for co-operation under technical cooperation agreements. Accordingly, the Romanian institute will contribute with technical information in the use of the appropriate equipment, as well as in the know-how transfer of the method and staff training.

## Advantages and innovations

Innovative character:

- ultrasound-assisted extraction is a rapid and simple extraction method requiring short time (usually less than 30 min) and no concentrated acids/ high temperatures compared to conventional methods (classic and microwave-assisted extraction).

Advantages:

- a small number of samples;
- low detection limit (approx. 50%) compared to other spectrometric methods (Inductively coupled plasma - optical emission spectrometry - ICP-OES and Flame atomic absorption spectroscopy - FAAS).

## Stage of development

Under development/lab tested

## Comments Regarding Stage of Development

Currently, the method is under development/lab tested, thereafter going to be a prototype available for demonstration.

## IPR Status

Patent(s) applied for but not yet granted

## Comment Regarding IPR status

The application to Romanian State Office for Inventions and Trademarks is pending.

## Profile Origin

COSME

## Keywords

### Technology

05001001	Analytical Chemistry
05004002	Extraction
08002001	Detection and Analysis methods

### Market

07003002	Health food
09005	Agriculture, Forestry, Fishing, Animal Husbandry & Related Products

### NACE

M.72.1.9	Other research and experimental development on natural sciences and engin
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## Network Contact

### Issuing Partner

INSTITUTUL NATIONAL DE CERCETARE DEZVOLTARE PENTRU OPTOELECTRONICA INOE ;

### Contact Person

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Open for EOI: **No**

## Dissemination

## Relevant sector groups

Agrofood  
Bio Chem Tech

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## Client

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### Type and Size of Organisation Behind the Profile

R&D Institution

### Year Established

1992

### Turnover

<1M

### Already Engaged in Trans-National Cooperation

Yes

### Languages Spoken

Romanian  
English

### Client Country

Romania

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## Partner Sought

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### Type and Role of Partner Sought

Type of partner sought: Research Institutes, Universities, and Research departments within SMEs, active in food quality and safety, environmental and chemical fields. Under the technical cooperation agreement, the sought partners should further develop the method which allows the determination of lead in the food of plant origin, using appropriate equipment and qualified personnel. The Romanian research institute will support its partners with technical consulting and staff training.

### Type and Size of Partner Sought

SME 11-50, University, R&D Institution, SME <10,>500 MNE, 251-500, SME 51-250,>500

**Type of Partnership Considered**

Technical cooperation agreement

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**Attachments**

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