

### IDENTIFICATION OF POTENTIAL MIGRANTS FROM DRY FOOD PACKAGING BY GC/MS

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Food packaging is a matter of concern from the point of view of food safety due to the possibility of migration of different chemical compounds from the materials into food (1).

Substances found in food contact materials can be intentionally added substances (IAS) that enhance certain qualities in the material and non-intentionally added substances (NIAS). The latter may be present as impurities of additives or monomers, or may be formed as reaction or degradation products during processing and found in the final product (2).

To estimate dietary exposure to a substance migrating from a food packaging material, information is needed on the types of food packaging, migration data and food consumption (3). For this, food contact materials should be monitored to ensure product quality and safety, with the ultimate objective of ensuring that no damage will occur in consumer health.

As a first step to evaluate the potential migrants present in food packaging, in the present study several plastic food packaging samples were analyzed. For that purpose, a screening approach was developed to tentatively determine the identity of potential migrants in the packaging through gas chromatography with mass spectrometry (GC-MS).

## MATERIALS AND METHODS

Based on the national consumption data (Enalia and Enalia 2) different cereal samples including, breakfast cereals, rice, bread and pasta were selected with the aim to test their packaging and identify potential migrants (4).

### **EXTRACTION PROCEDURE:**

Diethyl phthalate

Octocrylene

Squalene

- Solvent: acetonitrile
- Time-temperature conditions: 70°C / 24h
- Solvent: hexane

RT

17.33

20.66

21.74

24.75

25.75

26.04

27.32

28.34

29.40

29.63

Time-temperatura conditions: 60°C / 4h





#### **GC-MS ANALYSIS:**

ł	Equipment	Trace 1300 Series Gas Chromatograph with a Trace ISQ LT mass detector and an AI 1310 autosampler
	Column	ZB-5MS (30 m x 0,25 mm x 0,25µm)
	Carrier gas	Helium 1mL/min
	Injection	Splitless mode
	Injection volumen	1μL
	T <sup>a</sup> program	40ºC to 300ºC
	Data acquisition	m/z range of 30-500
	Transfer line T <sup>a</sup>	300ºC
	Spectrum library	Wiley 8th and Nist

# RESULTS AND DISCUSSION

The proposed GC/MS method could be used as a screening tool to identify potential migrants in food packaging materials. The presence of some compounds was confirmed using commercially standards.

Some of the identified compounds in the tested samples are authorized for the manufacture of plastic materials and articles that are intended to come into contact with foodstuffs, with established specific migration limits (5).

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Future research will be addressed to determine the migration in food samples and to estimate the exposure to these chemicals through the diet.



Table 1: Some of the chemicals identified in the acetonitrile and hexane extracts of the food packaging analyzed.

Figure 1: Chromatogram of an acetonitrile extract in a tested sample.



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(4) Agencia Española de Consumo, Seguridad Alimentaria y Nutrición (AECOSAN). Available in:

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Acknowledgements

The study was financially supported by the Ministerio de Economía y Competitividad, and by Fondo Europeo de Desarrollo Regional (FEDER), Ref.No. AGL2015-69609-P "MIGRAEXPO" (MINECO/FEDER, UE). V. García Ibarra is grateful for her grant form SENESCYT-Ecuador.