
“Desarrollo de un Método Práctico para Determinar el Origen y Autenticidad de Especies con Importancia Comercial Mediante ^1H -NMR-Análisis (HAGen)“

“Development of a Practical Procedure Suitable to Determine the Geographical Origin and Authenticity of Spices with relevant Market by means of ^1H -NMR-Analytic (HAGen)“

With support from



Mr. Stefan Kollenda – CEO
Dr. Wolfram Wendler- Project Leader
M. Sc. Iris Cordero – Project Administrator

Dr. Manfred Spraul – CEO
Dr. Andrea Steck- Lab & Data analysis
Dr. Birk Schütz – Statistics



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German Bundestag

¿Quiénes somos?

Who are we?

AROTOP

- 26 años en Industria Alimentaria
 - 26 years in Food Industry
- Institución Privada Acreditada
 - Accredited Private Institution
- Estudios de Mercado, Análisis Químicos, Microbiológicos, Sensoriales y Desarrollo de Productos
 - Market Research, Chemical Analysis, Microbiological Studies, Sensorial Evaluation & Product Development

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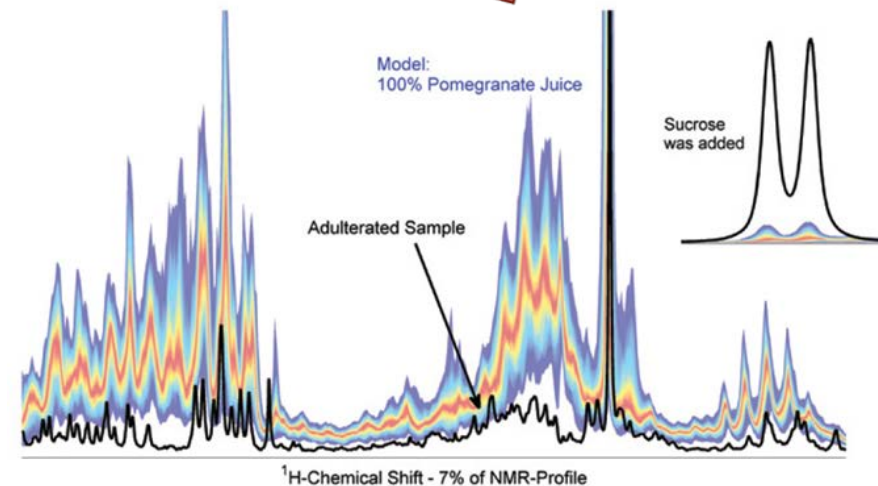
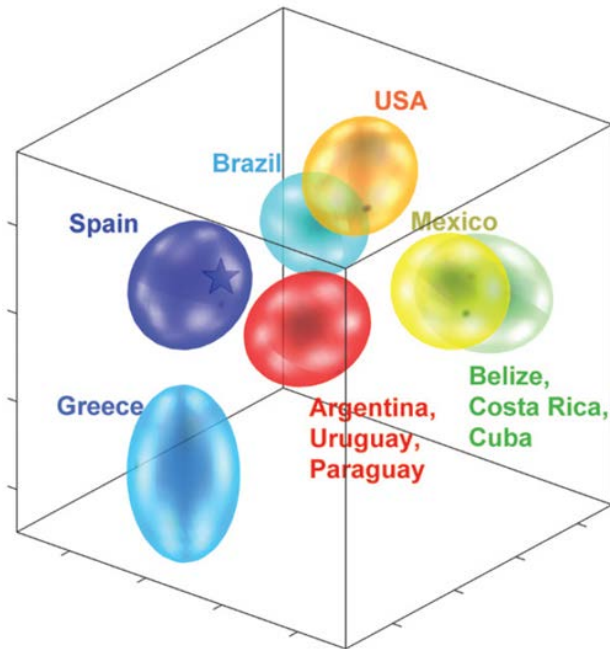
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BRUKER



- Statistical Models – Juices, Wine, Honey, Olive Oils
- Development of other Statistical Models – Juices, Wine, Honey, Olive Oils

Juice Screener



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Objetivo

Aim



Identificar diferencias químicas en la composición de pimienta blanca y negra (*Piper nigrum* L), pimentón (*Capsicum spp.*) Y azafrán (*Croccus sativus* L.) Para determinar el origen geográfico y autenticidad por medio del análisis ^1H -RMN

Identification of possible chemical differences in the composition of black and white pepper (*Piper nigrum* L.), paprika (*Capsicum spp.*) & saffron (*Croccus sativus* L.) to determine their geographical origin and authenticity using ^1H -NMR-Analitic.

- Origen Geográfico – pimienta, pimentón, azafrán
 - Gographical origin- pepper, paprika, saffron
- Autenticidad = falsificaciones, otras hierbas y especias
 - Authenticity = falsification, other herbs & spices

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Objetivos

Aim



- Desarrollo de protocolo
 - Development of SOP('s)
- Detección no determinada
 - Non-Targeted Screening
- Fingerprinting -Targeted Screening
- Identificación de marcadores
 - Determine Markers
- Identificación de elementos desconocidos (Autenticidad)
 - Identification of unknown compounds (Authenticity)
- **1000 Muestras/especia**
 - **1000 Samples/Spice**
- Primer año pimienta
 - First year pepper
- Segundo año pimentón
 - Second year paprika
- Tercer año azafrán
 - Third year saffron

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Colecta de Muestras

Sample Collection

- Selección de países
 - Land Selection

- Compañía INDASIA
 - Purchase Department INDASIA

- Asociación Europea de Especies
 - European Spice Association (ESA)

- Enfoque pimienta negra y blanca
 - Focus on black and white pepper

No.	Country	Pepper	Paprika	Safran
1	Afghanistan	-	-	X
2	Brazil	X	-	-
3	China	X	X	-
4	Ecuador	X	-	-
5	India	X	-	-
6	Indonesia	X	-	-
7	Iran	-	-	X
8	Israel	-	X	-
9	Malaysia	X	-	-
10	Morocco	-	-	X
11	Peru	-	X	-
12	Spain	-	X	X
13	Sri Lanka	X	-	-
14	Hungary	-	X	-
15	Vietnam	X	-	-

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Desarrollo Development

Laboratorio/Lab

- Determinación de solventes
 - Solvent selection
- Primer método
 - First SOP
- Estabilidad del extracto
 - Stability of the Extract
- Reproducibilidad
 - Reproducibility
- Cambios químicos al moler
 - Chemical changes after grinding

Muestras/Samples

- Cantidad de muestra a transportar
 - Quantity of sample to transport
- Pimienta- muestras por varietal
 - Pepper- varietal samples
- Pimentón- clasificación complicada
 - Paprika- complicated classification
- Influencia Climática
 - Climate influence

- Metadatos
 - Metadata



- Almacenamiento & Trazabilidad
 - Storage & Traceability



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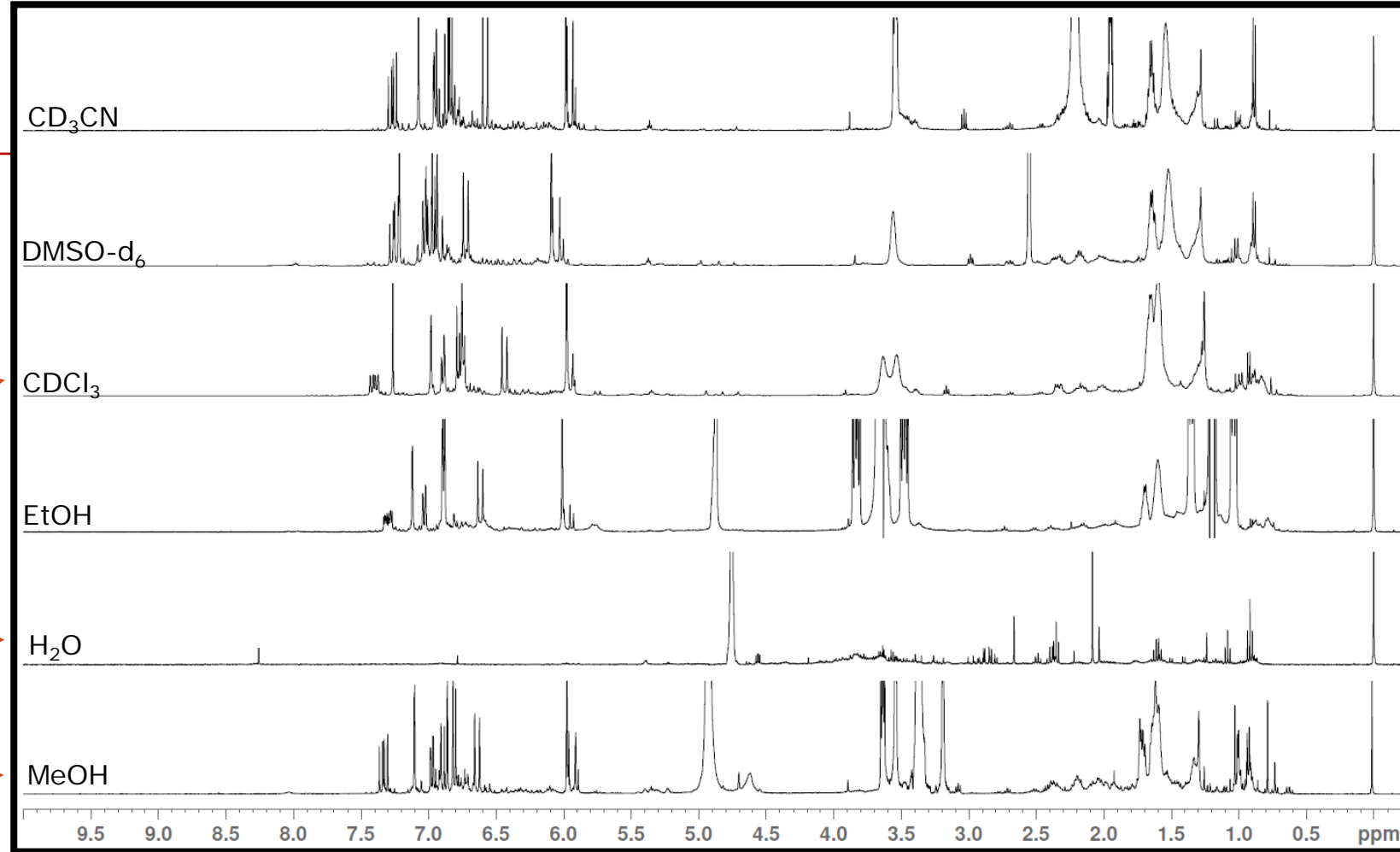
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Primeros Resultados

1st Results

¹H-NMR of white pepper
extracts

Solvent comparison



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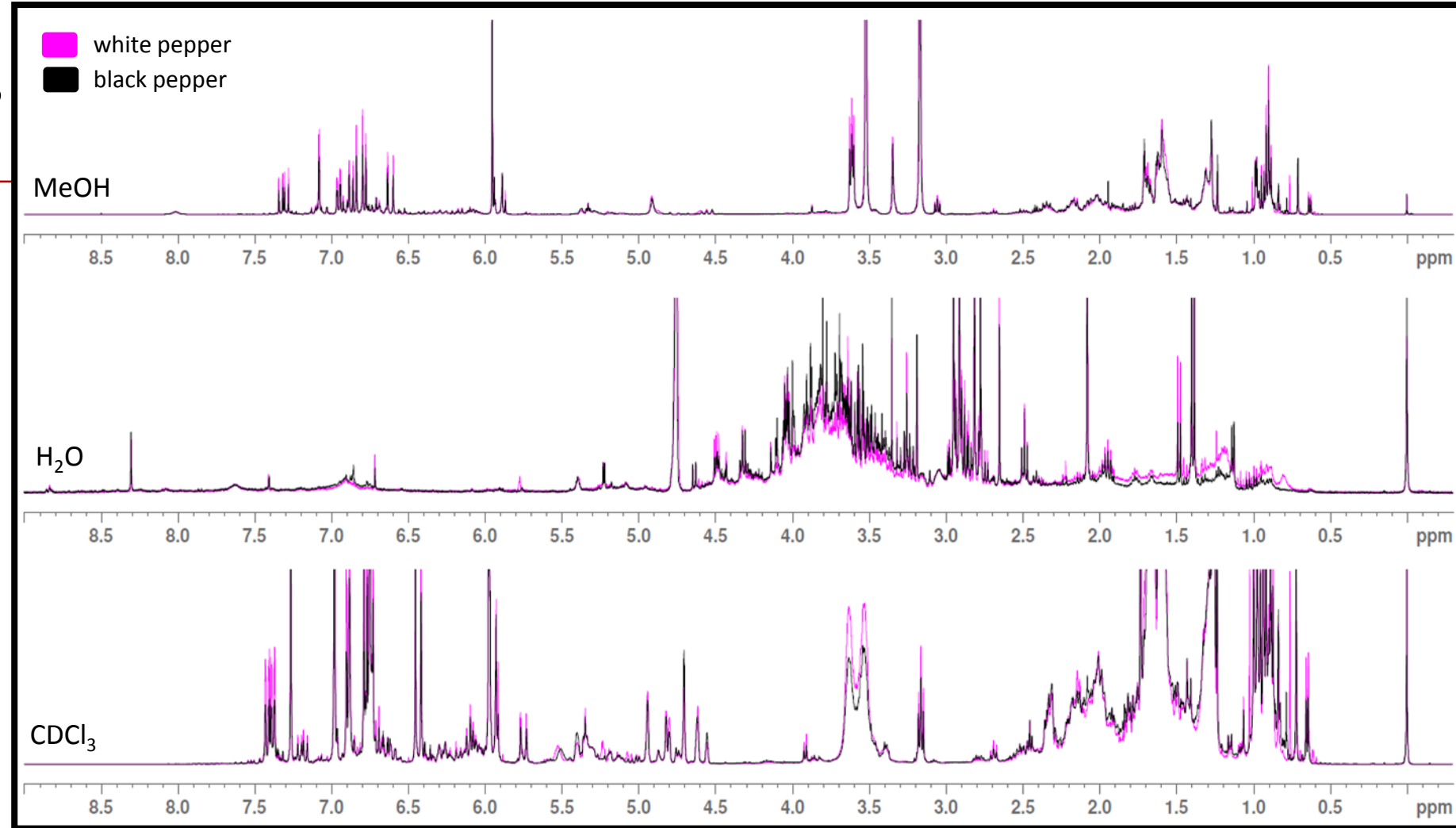


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Primeros Resultados

1st Results

¹H-NMR
white pepper
Vs.
black pepper
Origin: Brazil



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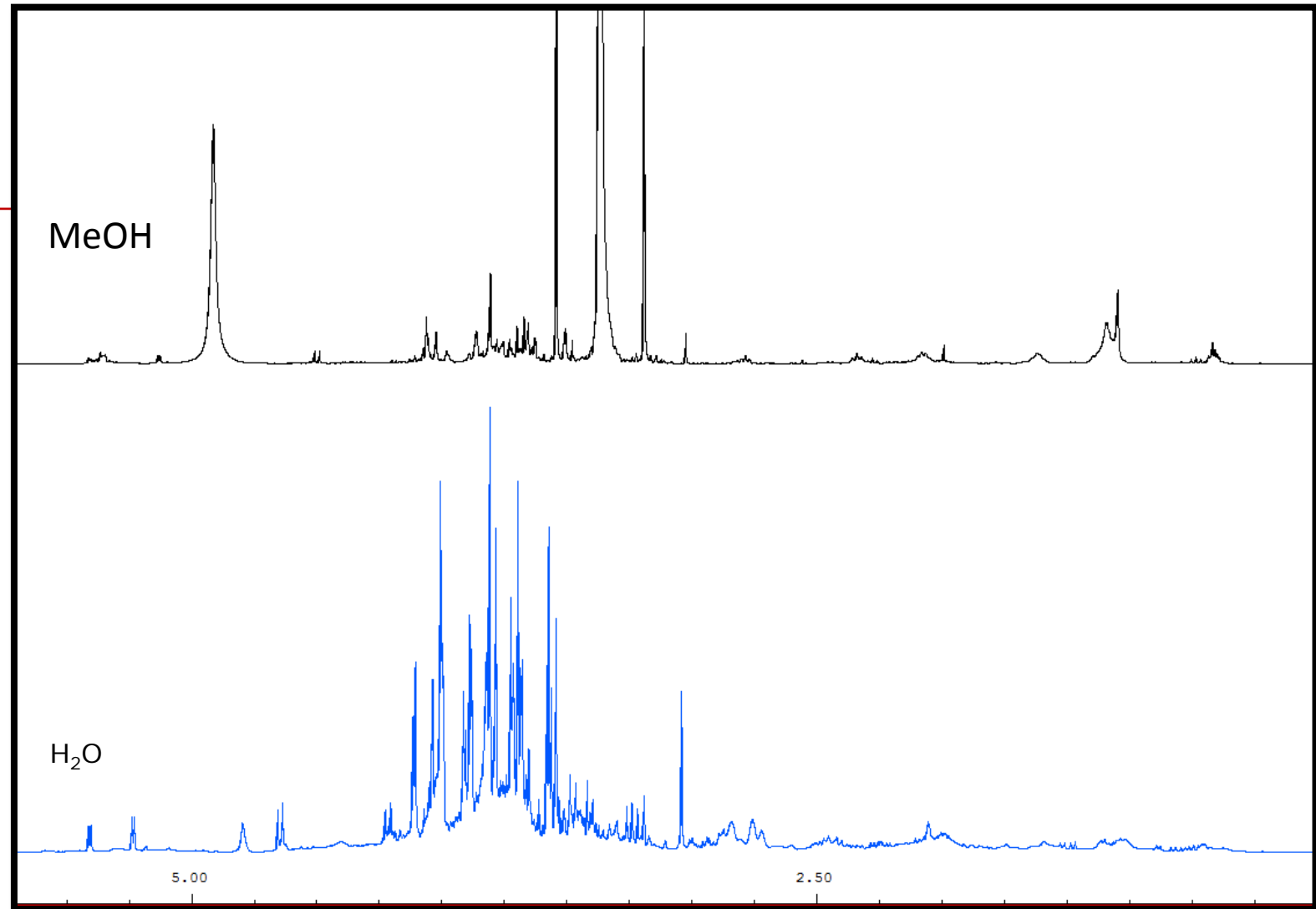


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Primeros Resultados

1st Results

¹H-NMR
Commercial
Paprika
Origin: Spain



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Trabajo 2017

Work 2017

- Comparación lab-lab
 - Lab-to-Lab comparasion
- Colecta Pimienta & Pimentones
 - Pepper & Paprika collection
- Colección de hierbas
 - Herbs collection
- Desarrollo de base de datos
 - Data base development
- Primeras pruebas estadísticas
 - First statistical trials

Colecta de Muestras 2017 Sample Collection 2017	
País/Country	Producto/Product
España/Spain	Pimentón/Paprika
Perú/Peru	
Hungría/Hungary	Pimienta Blanca y Negra
Malasia/Malaysia	
Indonesia	Pimienta Blanca y Negra
India	
Brasil/Brazil	Black & White Pepper Community (IPC)
Sri Lanka	
China	
Vietnam	Pepper

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Buscamos...
We are searching for

Proveedores de Muestras
Sample Providers

Nuevos Contactos
New Contacts

Nuevas Propuestas
New Ideas

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Gracias por su Atención!!

Many Thanks for your Attention!

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