



# ALL SPECIES ID

New developments in DNA testing and risk assessment

WHEN YOU NEED TO BE SURE





# AT A GLANCE



**N°1**  
WORLD LEADER

**97 000**  
EMPLOYEES

**2 600**  
OFFICES AND  
LABORATORIES



**11**  
GLOBAL  
INDUSTRIES

**GLOBAL  
SERVICE  
LOCAL  
EXPERTISE**

- Located in Portugal/Lisbon
- Specialized on DNA-based methods
- Unique Next Generation Sequencing workflow
- **ISO 17025** Accreditation (PCR, DNA sequencing including NGS)
- Listed as **EU reference Lab** since 2011 for DNA detection/quantification for foods (also Listed as **EU reference confirmatory Lab** on recommendation EU/2014/180 after the Horse meat scandal in Europe)
- Leading ISO and AFNOR standard projects about NGS for species ID in food products



## SPICES AND HERBS

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- Consumers expect that herb and spice products on the store shelf and food outlet menus are safe to eat and drink, yet contamination and adulteration of herbs and spices remains a challenge for the industry.
- Herbs and spices play an integral role in the global food market, as both raw materials and end-products
- The effect of food contamination on consumer health varies dramatically, depending on the contaminant. Preventing tainted herbs and spices, as either ingredients or end products, reaching the consumer is paramount



## WHY USE NGS?

- NGS is a DNA diagnostics tool that allows for an open question on what biological content of a sample:
  - What **Plants** are in the sample?





- Untargeted
- Thousands of species can be identified simultaneously – you can detect any kind of species, even unexpected ones
- Reliable results in complex and processed samples
- High specificity
- High sensitivity
- New ISO project:
  - ISO TC 34/SC 16 ISO 22949-1. Molecular biomarker analysis – Detection and identification of animal species by DNA sequencing methods



## Analysis report

| Report type | Date       | Reference     |
|-------------|------------|---------------|
| Original    | 2017-0x-xx | 17_1xxxx.xxxx |



### SAMPLE NO. xxxxx

Entry registration no.: 1xxxx  
 Sample description: SPICES  
 Sample code: 4  
 Batch: N/A  
 Expiration date: N/A  
 Request no.: N/A  
 Entry date:  
 BIOPREMIER transport: No  
 Product type: Agro-food  
 Request Type: Occasional

### CLIENT IDENTIFICATION

C/o: N/A  
 Entity: .  
 Address:  
 Postal code:  
 Country: N/A

| <u>Entry date</u> | <u>Entry date</u> | <u>Conclusion date</u> |
|-------------------|-------------------|------------------------|
| 2017-0x-x7        | 2017-0x-xx        | 2017-xx-xx             |

### Analysis parameters Molecular Biology

Start date: 2017-xx-xx      End date: 2017-xx-xx

| Test   | Test code             | Unit             | Result  | Criteria |
|--|-----------------------|------------------|---|----------|
| Identification of multiple plants species by PCR and DNA sequencing (NGS method) | PT11.05<br>2016-05-10 | N/A (LOD - 0,5%) | Laurus nobilis (sweet bay) + Cuminum cyminum (cumin) + Foeniculum vulgare (sweet fennel) + Arbutus sp. (It includes Arbutus unedo) (strawberry tree) + Myrtus communis (myrtle) + Origanum sp. (origano/majoram) + Thymus sp. (It includes Thyme) |          |

## CASE STUDIES

### Oregano supplier selection

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- Retailer asked for NGS spices on their own brand of oregano products
- The results about oregano presence and purity obtained were not expected
- The retailer use NGS to do a market study
- Retailer could select the best provider with the best oregano results





## CASE STUDIES

### Laurel raw material

- Retailer asked for NGS spices in Curry mixture (containing more than 10 spices according to label)
- All the spices except laurel (scientific name *Laurus nobilis*) were identified
- Retailer informed supplier about it
- Supplier contested and sent their Laurel 100% ingredient for analysis
- NGS spices was performed and the majority of the sample (> 90%) was composed by a very similar plant of the laurel family but not *Laurus nobilis* (laurel)
- The supplier was mixing in the curry preparation
  - a species similar to Laurel
  - Only less than 10% of true laurel





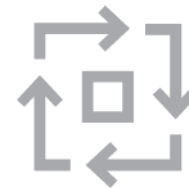
**GLOBAL  
NETWORK**



**ISO 17025  
ACCREDITED**



**STATE-OF-THE-  
ART  
TECHNOLOGY**



**HARMONIZED  
PROCEDURES**



**RAPID  
TURNAROUND  
TIME**



**DATA  
MANAGEMENT  
AND  
REPORTING**



**KEY ACCOUNT  
MANAGEMENT**



**TECHNICAL  
COMPETENCE**



**TECHNICAL  
ASSISTANCE**



**CUSTOMIZED  
SERVICE**

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