icgene

SYSTEM FOR REAL-TIME GENETIC DETECTION

BENEFITS

- ACCURATE AND QUICK ANALYSIS COMPARED TO STANDARD METHODS
- CLOUD ARCHIVING OF ALL ANALYSES

In order to provide an optimal product it is necessary to perform a **thorough check on the possible presence of contaminants,** which could compromise the quality of the final product. Thanks to modern DNA amplification techniques, it is possible to **verify the presence of any contamination in a short time**.

Icgene allows achieving **accurate results without having to resort to standard methods**, based on microbiological analysis with plates and also compared to PCR-based techniques, which require sophisticated equipment, specialised laboratory personnel and longer incubation times.

OPERATION

Icgene operation is based on the amplification of specific DNA sequences through the **LAMP** (Loop-Mediated Isothermal Amplification) **technique** applied directly to food samples.
The amplified production of these sequences is converted into a fluorescent signal, which shows the contamination, if any. The device works by applying **reagents**, which are used to **extract DNA** from the matrix and amplify it, making it detectable by the device.

Icgene is quite intuitive. Only a few steps are necessary to use it:

1. **Identify the sample to be analysed** (wine, water, washing solutions, etc.);
2. **Centrifuge a sample of solution and process it with the reagents** suitable for DNA extraction and precipitation;
3. Amplify specific gene sequences using the special micro tubes contained in the kit;
4. **After about half an hour**, the results of the analysis will be visible on the **tablet** supplied with the device. The system also **stores all the analyses in a Cloud,** allowing the user to have a complete history.

Thanks to a dedicated kit, with Icgene it is possible to detect ***Brettanomyces bruxellensis*** and ***Botrytis cinerea***.

Reagent kit for the analysis of Brettanomyces bruxellensis

COMPONENTS

The **Icgene** equipment includes:

- **an isothermal incubator** (60°C) for micro test tubes;
- **Android tablet** that interfaces with the device, including software for the analysis and review of the results;

The following instruments, which are normally present in analysis laboratories, are required to use Icgene in the best possible way:

- mini centrifuge up to 14000 rpm;
- set of micro pipettes pre-calibrated with the analysis volumes;
- set of micro pipettes pre-calibrated for the protocol volumes to be applied.

REAGENT KIT

The package contains the reagents necessary for Icgene to work with different types of contaminants:

- DNA extraction swabs;
- DNA extraction columns;
- amplification micro tubes.

The kit allows analysing the presence of the following contaminants:

1 *BRETTANOMYCES BRUXELLENSIS*

Real-time analysis of wine samples, rinsing waters, wooden surfaces (by swabbing) is the **ideal procedure to eradicate *Brettanomyces bruxellensis*** or to ensure that the cellar is free from this microorganism.
To this end, **Icgene** is the ideal solution because it provides a **low-cost and easily reproducible analysis** and allows **checking every single wine batch**, in order to manage the flows of the cellar in complete safety. In short, it is a simple system that allows verifying correct cleansing aimed at eliminating the problem, or proper wine processing in order to neutralise this contaminating yeast.

REAGENT KIT

2 *BOTRYTIS CINEREA*

Often, due to **reasons related to the transport of grapes or the intense harvest production flows**, *Botrytis cinerea* contamination could go unnoticed in the must and become manifest, with negative effects, only when processing has begun. As already known, *Botrytis cinerea* is a mould which, **if managed wisely** and once the oxidative effects resulting from laccases have been neutralised, **does not excessively affect the quality of wines**, limiting the challenges in processing musts in the clarification processes (caused by the high presence of glucans). If identified, the **problem can be easily eliminated** at early stages, blocking neutralising the negative organoleptic effects of this contaminant,through the use of products from the **Antibotrytis line**.

3 *SALMONELLA SPP*

Microorganisms from this family are responsible for most foodborne gastrointestinal diseases. For this reason, the presence of *Salmonella spp*, even in minimal quantities, is **prohibited in all foods**. The search for this microorganism in food (performed according to the **standard method**, by pre-enrichment, enrichment and isolation) takes at least **5 days**. However, the **Icgene** method only requires **3 days**.

4 *ESCHERICHIA COLI*

Even if only a few biotypes of *E. coli* are pathogenic, the presence of the whole species in foods and beverages is considered to be the result of **Faecal Contamination** (found both in foods, and as the consequence of human contact or use of non-potable water). The **official method** for detection in food takes **3 to 4 days**, which can be reduced to **a few hours** with the **Icgene** method.

5 *LISTERIA SPP*

The presence of *Listeria monocyitogenes* is a factor of great interest. Indeed, recent studies have associated this bacterium with **severe pathological conditions, even fatal,** especially on individuals with low immune defences. For this reason, the presence of *Listeria monocyitogenes* in food is permitted in low numbers in Europe, and banned in **many countries including the United States and Japan.** For this reason, a quick identification method is particularly useful for companies exporting to these markets, as it enables the **quick release of production batches.** The standard detection of *Listeria spp* in food requires **5 days**, which can be reduced to just **2 days** with the **Icgene** method.

6 *CAMPYLOBACTER SPP*

Campylobacteriosis is one of the most widespread bacterial gastrointestinal diseases in the world and its incidence rate has exceeded that of salmonellosis in some European countries, becoming a public health problem with a considerable socio-economic impact. The standard isolation of *Campylobacter* in food is carried out with enrichment and subsequent growth on selective medium: this process lasts 4 days, while with the **Icgene** method it is possible to have the result in a few hours.