HYRIS
GLOBAL DIAGNOSTICS

bKIT *Cynara cardunculus*

Real-Time PCR assay

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Cynara cardunculus

The species *Cynara cardunculus*, belonging to the Asteraceae family, includes varieties such as artichoke (*Cynara cardunculus* var. *scolymus*) and cardoon (*Cynara cardunculus* var. *altilis*) that are widely cultivated. In fact, due to the nutritional properties and the presence of bioactive compounds[1] their use embraces many applications from food to medicine.

1. Efterpi Christaki, Eleftherios Bonos, Panagiota Florou-Paneri. Nutritional and Functional Properties of Cynara Crops (Globe Artichoke and Cardoon) and Their Potential Applications: A Review. International Journal of Applied Science and Technology Vol. 2 No. 2; February 2012

Principle

Hydrolysis probe Real-Time PCR assay for the detection of *Cynara cardunculus*. The product is intended for research purpose only.

Validation trials

In the validation trials performed by Hyris Ltd the following species were tested: *Silybum marianum, Cirsium* spp., *Panax quinquefolius, Zingiber officinale* and *Serenoa repens*.

bKIT *Cynara cardunculus* packaging

***Part Number:* bKTB-CC.01-50**	
qPCR Master Mix (1 tube)	50 tests
Positive Control (1 tube)	10 tests
Negative Control (1 tube)	10 tests

***Part Number:* bKTB-CC.01-100**	
qPCR Master Mix (2 tubes)	2 x 50 tests
Positive Control (1 tube)	20 tests
Negative Control (1 tube)	20 tests

Storage

-20°C. Avoid prolonged exposure to light and repeated freeze and thaw cycles.

Shelf life

If the bKIT is correctly stored, at constant-temperature freezer, its performance is guaranteed until the shelf life indicated on the tubes.

Additional material/reagents required

- DNA extraction tools and reagents
- Nuclease-free water
- Gloves
- Pipettes
- bCUBE® instrument or other Real-Time PCR instrument (*) with filters calibrated for FAM
- bCUBE® sample loading cartridge or, if using other Real-Time PCR instrument, samples loading support according to the instrument specifications.

(*) This assay was especially developed to be used in association with the bCUBE® instrument, available from Hyris Ltd, but can be used also with any other compatible thermal cycler.

DNA extraction

Extract DNA from samples according to your usual protocol. If necessary, Hyris can recommend an extraction method. At this purpose, contact us at support@hyris.net.

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Reaction Set-Up

a. Thaw all the bKIT components by placing the tubes on ice.
b. Gently mix the tubes content by swirling the tubes.
c. Spin the tubes to let the content down.
d. In new tubes, one for each sample, including the Negative Control and the Positive Control of the bKIT, prepare the Reaction Mix as shown in the table below:

Components	Volume
DNA sample or Positive Control or Negative Control	3 µl
qPCR Mastermix	17 µl
Total Volume	**20 µl**

Cartridge set-up

The procedure described is for the bCUBE® cartridge, but, if using a different Real-Time PCR instrument, the same procedure can be adopted for other loading sample supports with minor modifications.

1. Samples set-up

a. Samples of the following types must be prepared to be loaded on the cartridge:
Positive Control for *Cynara cardunculus*
Negative Control for *Cynara cardunculus*
Sample(s) to be tested.

2. Cartridge Loading

a. Load the sample prepared as described in the previous section
b. Carefully seal the cartridge with adhesive film in order to avoid any contamination.
c. Load the cartridge onto the bCUBE®, then start the run.

Method set-up

Set up the run method using the following conditions, depending on the instrument you use.

1. On the bCUBE®

a. Login on the bAPP.
b. Set-up "New Analysis" and Select the "*Cynara cardunculus* 1.x" from the Global Recipes on the bAPP.
c. Define your wells types as follows (**Fig. 1**):
"PosCtrl" for the well loaded with *Cynara cardunculus* Positive Control.
"NegCtrl" for the well loaded with *Cynara cardunculus* Negative Control.
"Sample" for the wells loaded with samples under analysis.

Fig 1. Cartridge set-up
An example of cartridge set-up on the bAPP for one replicate of a sample to be analyzed is shown.

2. On a compatible Real-Time PCR instrument

Please, contact us for the protocol set-up on the instrument.

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Results analysis

1. <u>On the bCUBE®</u>

a. The presence of the target *Cynara cardunculus* in the Positive Control or in the sample under analysis will generate an amplification curve **(Fig. 2)**

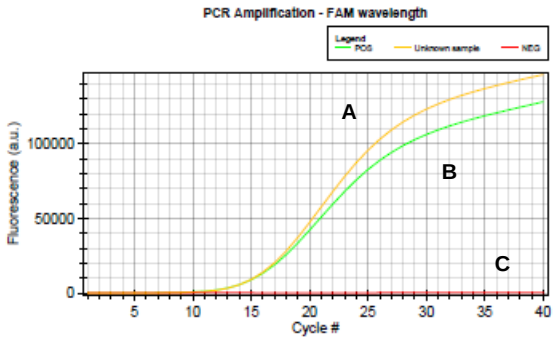

Fig.2. Amplification
In the plots, the amplification curve of a *Cynara cardunculus* target containing sample (A), a Positive Control (B), and a non-*Cynara cardunculus* target containing sample or Negative Control (C) are shown.

b. At the end of analysis each well will be labelled depending on the well type as described in the tables below:

Well	Possible labels	
Positive Control (PosCtrl)	OK	KO
Label meaning	Amplification curve present	Amplification curve absent

Well	Possible labels	
Negative Control (NegCtrl)	OK	KO
Label meaning	Amplification curve absent	Amplification curve present

Well		Possible labels	
Sample	Present	Absent	Indeterminate
Label meaning	*Cynara cardunculus* is present in the sample	*Cynara cardunculus* is absent from the sample	The test is not conclusive and should be repeated (**)

(**) If the Indeterminate classification persists, contact us.

c. On the bAPP, and on the pdf report of the analysis, the samples classification will be also shown (**Fig. 3**).

Results for target *Cynara cardunculus*		
Positive control	(PosCtrl)	OK
Unknown sample	(Sample)	Present
Negative control	(NegCtrl)	OK

Fig.3. Analysis results table
The results table, as reported in the pdf report of the analysis, is shown.

2. <u>On a compatible Real-Time PCR instrument</u>
Please, contact us for results interpretation.

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Troubleshooting

1. Results show no amplification, or anomalous amplification curves

Possible causes	Corrective actions
Evaporation of the sample due to inadequate sealing of the plate/strips	Repeat the test using the appropriate tools to seal correctly the plate/strips
Consumables are not appropriate for the method	Repeat the test using consumables recommended by the supplier of the Real-Time PCR instrument
The quality of nucleic acid extracted is low	Repeat the extraction step. Ensure that the method of extraction has been performed correctly. In any doubt, contact us

2. No amplification curve is observed for the Positive Control

Possible causes	Corrective actions
The Positive Control provided with the assay was not added into the reaction well	Repeat the test. If the problem persists, contact us

3. An amplification curve is observed for the Negative Control

Possible causes	Corrective actions
Contamination of the Negative Control or the qPCR Master Mix with target-positive DNA	Repeat the test by applying appropriate quality procedures to prevent contamination. If the problem persists, contact us. Correctly seal the cartridge or plate/strips

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