CYP2C9 A1075C ToolSet™ for LightCycler™

(CYP2C9*1 / CYP2C9*3 Allele, Oral Anticoagulation, Pharmakogenetics)

Lyophilized ToolSet for PCR using the LightCycler™ Instrument. Licensed by Roche Diagnostics GmbH

Order#: CYP2C9 1075 - 16

1 ToolSet for 16 reactions

Store at 4°C, protected from light.
Exposure to light may especially damage the Oligotool ™ tube (vial with red cap).

For use with **LightCycler FastStart DNA Master HybProbe**, 10 x conc. (Roche Cat.No.: 03003248001)

1. ToolSet contents

Vial	Label	Content	Quantity
			CYP2C9 1075 - 16
1, Red cap	**OligoTool**	- lyophilized oligos for PCR - contains mutation detection and anchor probe, primers	For 16 tests Dissolved: 50 µL
2, Green cap	**Control**	- lyophilized heterozygote DNA	Dissolved: 20 µL
3, Blue cap	**Solvent**	- to dissolve OligoTool / Control	1000 µL of Solvent

Additional equipment and reagents required but not supplied :
LightCycler FastStart DNA Master Hybridization Probes, 10 x conc.Cat.No.: 03003248001, including 25mM $MgCl_2$; LightCycler instrument, LightCycler capillaries, DNA extraction materials

2. Introduction

2.1. Product overview

ToolSet description

This ToolSet is specifically designed for genotyping the A1075C mutation in the CYP2C9 gene by LightCycler PCR with Melting Curve Analysis. The primer pair and fluorescent detection and anchor probes have been optimized for specific amplification of a 180 bp segment containing the potentially mutated site and optimal genotype discrimination.

Control material

Heterozygote control DNA, lyophilized.

Storage of ToolSet and Solutions

Store at +4°C when lyophilized, protected from light.
The unopened lyophilized ToolSet is stable at +4°C for 12 months from date of manufacture if protected from light. When dissolved store at +4°C for a maximum of 4 weeks, or at -20°C for longer periods (months), protected from light.
Avoid freezing and thawing.

3. Preparation for LightCycler PCR

Toolset preparation

Dissolve the content of the **OligoTool** tube (Red Cap) with **50 µl of Solvent**.
Dissolve the content of the **Control** tube (Green Cap) with **20 µl of Solvent**.

1. Before opening tubes, centrifuge them quickly.
2. Add Solvent into OligoTool tube and Control tube as above.
3. Recap tubes, vortex gently.
4. Before opening tubes, centrifuge them quickly.
5. Proceed to Reaction Mix preparation.

Primers ?
Probes ?

You don't have to add primers.
You don't have to add probes.

Reaction Mix Preparation

For 1 (One) reaction, prepare the Reaction Mix as shown in the following table :

Reagent	µL
OligoTool CYP2C9 1075 -16, dissolved	2.8
Solvent CYP2C9 1075 -16	8.8
$MgCl_2$ 25 mM	2.4 (final 4 mM)
FastStart DNA Master HybProbe, 10x	2
Total Reaction Mix	16
+ Your DNA or Control CYP2C9 1075 –16	4
Grand Total	20

Use LightCycler FastStart DNA Master Hybridization Probes 10x and $MgCl_2$ 25 mM from Roche LightCycler FastStart DNA Master Hybridization Probes, 10 x conc. (Roche Cat.No.: 03003248001, including 25mM $MgCl_2$).
For multiple reactions, multiply the indicated volumes appropriately.

Positive Control

Always run a positive control with the samples. Use the dissolved CYP2C9 A1075C heterozygous Control DNA (Green Cap).

Negative control

Always run a negative control with the samples. To prepare a negative control, replace the template DNA with Solvent (Blue Cap).

Extraction of genomic DNA

You can use different Kits for DNA isolation, either with a manual method or with an automated system. The elution buffers should be salt-free. Example : Roche High Pure PCR Template Preparation Kit (Cat.No. 1 796 828).

Application

The **CYP2C9 gene** encodes a major isoform of cytochrome P450 responsible for oxidation of a wide array of drugs including cumarins commonly employed for oral anticoagulation.
The **CYP2C9 A1075C** ToolSet™ for LightCycler™ allows detection of the **A→C** mutation at position 1075 in the CYP2C9 gene causing an Ile359Leu amino acid exchange.
The CYP2C9 1075C mutation (CYP2C9*3 allele) is associated with impaired CYP2C9-mediated metabolism and enhanced sensitivity to cumarins.

Note : This ToolSet was developed for use in life science research only.

4. LightCycler Settings and Experimental Protocol

Denaturation and FastStart Activation

Cycle Program Data	**Value**
Cycles	1
Analysis Mode	None
Temperature Targets	**Segment 1**
Target Temperature (°C)	95
Incubation time (s)	**600**
Temperature Transition Rate (°/s)	20
Secondary Target Temperature (°C)	0
Step Size (°C)	0
Step Delay (Cycles)	0
Acquisition Mode	None

Amplification

Cycle Program Data	**Value**		
Cycles	**38**		
Analysis Mode	None		
Temperature Targets	**Segment 1**	**Segment 2**	**Segment 3**
Target Temperature (°C)	95	**59**	72
Incubation time (s)	5	5	5
Temperature Transition Rate (°/s)	20	20	20
Secondary Target Temperature (°C)	0	0	0
Step Size (°C)	0	0	0
Step Delay (Cycles)	0	0	0
Acquisition Mode	None	Single	None

Melting Curve Analysis

Cycle Program Data	**Value**		
Cycles	1		
Analysis Mode	Melting Curves		
Temperature Targets	**Segment 1**	**Segment 2**	**Segment 3**
Target Temperature (°C)	95	45	75
Incubation time (s)	60	60	0
Temperature Transition Rate (°/s)	20	20	0.2
Secondary Target Temperature (°C)	0	0	0
Step Size (°C)	0	0	0
Step Delay (Cycles)	0	0	0
Acquisition Mode	None	None	Continuous

Cooling

Cycle Program Data	**Value**
Cycles	1
Analysis Mode	None
Temperature Targets	**Segment 1**
Target Temperature (°C)	40
Incubation time (s)	30
Temperature Transition Rate (°/s)	20
Secondary Target Temperature (°C)	0
Step Size (°C)	0
Step Delay (Cycles)	0
Acquisition Mode	None

LC Program Version and Fluorescence Display Mode

Developed with LC Program Version 3.5 and automatic gain control.
For fluorescence display use F2/F1, or F2 with colour compensation.

5. Typical results

Introduction

Use the Melting Curve program to genotype the human genomic DNA research samples. The melting peaks allow discrimination between the possible genotypes at the **A1075C** mutation site in the **CYP2C9** gene. Figure 1 shows a typical result obtained with the **CYP2C9 A1075C** ToolSet™ for LightCycler™ :

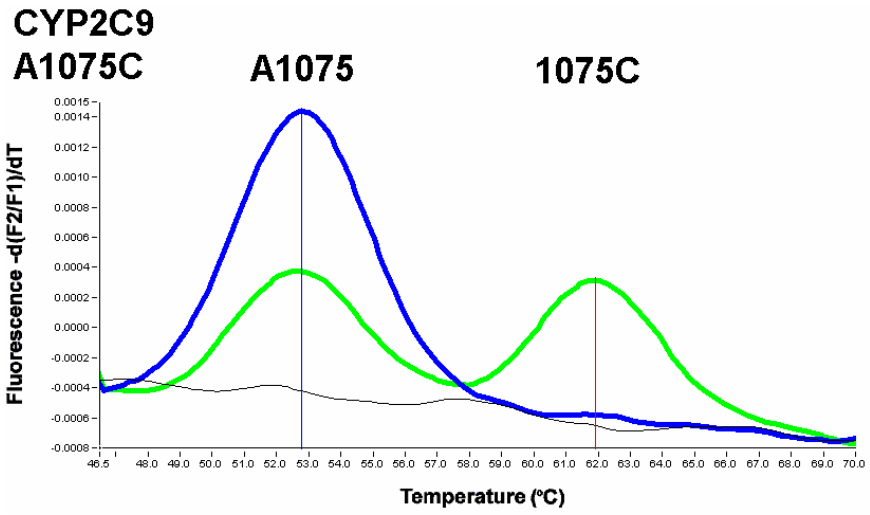

Figure 1 : Melting curve analysis of genotypes at position 1075 of the human CYP2C9 gene

BLUE : **Homozygote** **AA 1075** (wild type)
GREEN : **Heterozygote** **A1075C** (Control DNA contained in the ToolSet)

BLACK : No DNA Control.

Blue Cursor : T_m = 52.7 °C ; **Red Cursor** : T_m = 61.9°C

Conditions : LC program version 3.5 with automatic gain setting, No Color compensation, Digital Filter enabled, Degrees to average : 11.0. Calculation Method : Polynomial.

Note : The values for the respective melting temperatures may vary for +/- 2.5 °C between different experiments. The Delta T between the melting peaks for different genotypes may vary +/- 1.0 °C. The CYP2C9 A1075C ToolSet™ has been developed for and validated with the LightCycler™ and its original accessory materials and reagents. Performance of the ToolSet with other instruments, accessories and reagents has not been validated by ratiogen.

7. Notices to Purchaser : Licenses and Trademarks, Prohibition of Resale

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