LUMEX Analytical Equipment

REAL-TIME MICROCHIP PCR ANALYZER
AriaDNA®

MICROCHIPS FOR IDENTIFICATION OF SNPS IN CYP2C9 AND VKORC1 GENES BY REAL-TIME PCR ANALYZER ARIADNA®

Therapeutic importance and risk associated with the anticoagulant warfarin prescribed for blood clot treatment has necessitated the need for testing and screening of patients for single-nucleotide polymorphisms (SNPs) in two genes: CYP2C9 (encodes the main enzyme involved in warfarin metabolism) and VKORC1 (encodes the vitamin K-epoxide reductase protein, the target enzyme of warfarin). Diagnostic tests for these SNPs identification are recommended to improve safety of warfarin treatment in patients to address narrow therapeutic index of warfarin.

Microchip PCR analyzer AriaDNA®
(Reg. No. 2011/12249, registered on 03.11.2011)
and AriaDNA®-Warfarin microchip kit

LUMEX INSTRUMENTS presents AiraDNA-Warfarin microchip PCR kit for simultaneous identification of CYP2C9 (*2 and *3) and VKORC1 (-1639G/A) polymorphisms that can help clinicians to determine the warfarin dosage. The microchips with lyophilized PCR reagents mixes just need an addition of the test sample with a buffer into the individual reactors of the microchip.

Advantages of AriaDNA and microchip technology

- Rapid analysis of SNPs within 30 minutes with analytical sensitivity of 1ng/µl of patient DNA
- Simultaneous screening of several SNPs in several samples
- Reduced consumption of DNA sample
- Minimized manual operations and human errors in preparation of PCR mixes
- Minimizing errors in SNP determination by analyzing control samples on the same microchip
- The microchips can be transported and stored at ambient temperature up to 6 months.

Configuration of the microchips: The layout of AriaDNA-Warfarin microchip pre-loaded with lyophilized reagent mixes in 30 microreactors for testing of two DNA samples:

CYP2C9 *2	CYP2C9 *3	VKORC	CYP2C9 *2	CYP2C9 *3	VKORC
CYP2C9 *2	CYP2C9 *3	VKORC	CYP2C9 *2	CYP2C9 *3	VKORC
CYP2C9 *2	CYP2C9 *3	VKORC	CYP2C9 *2	CYP2C9 *3	VKORC
C+ *2 wt/wt	C+ *2 wt/mut	C+ *2 mut/mut	C+ *3 wt/wt	C+ *3 wt/mut	C+ *3 mut/mut
C+ VKORC wt/wt	C+ VKORC wt/mut	C+ VKORC mut/mut	C– CYP2C9 *2	C– CYP2C9 *3	C– VKORC

Fig. 1. A microchip configuration for analysis of two DNA samples, shown in **blue** and **red** (n=3) . **C+** – positive controls (**wt/wt** – wild-type homozygous, **wt/mut** – heterozygous, **mut/mut** – mutant homozygous), **C–** – negative controls.

AriaDNA software

User friendly software designed to acquire and analyze real-time PCR data provides microchip description, instrument set up guidelines, PCR analysis settings and ready to print report generation. Analysis report is automatically generated with the selected layout.

Human genome CYP2C9-2 genotyping data

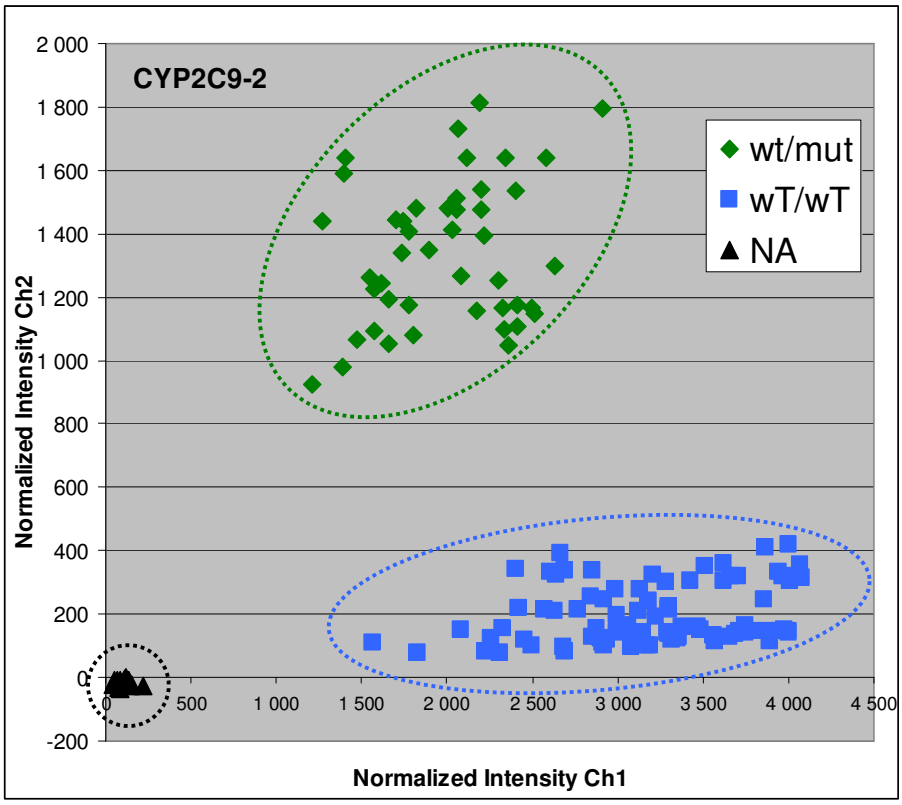

Fig. 2. Results of CYP2C9-2 genotyping using AriaDNA®-Warfarin microchips: 45 human blood DNA samples analyzed (n=3) on 5 microchips (150 PCR data points) in 2.5 h. Normalized intesntity of channel 1 and 2 are plotted (**wT** — wild-type homozygous, **wt/mut** — heterozygous, **NA** — negative control).

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