

Clinical implications

Fluoropyrimidines (5-fluorouracil and its prodrugs capecitabine and tegafur) are the basic drugs used in chemotherapy of gastrointestinal cancer. Their use is limited by development of many toxic effects including life-threatening myelosuppression. Dihydropyrimidine dehydrogenase (DPD) catalyzes the initial step of pyrimidines catabolism. It inactivates fluoropyrimidine chemotherapeutics and its activity influences the frequency of toxicity. It is not recommended to administer the fluoropyrimidines to the patients with DPD deficiency. When studying polymorphisms of the gene for DPD (DPYD), the relationship between presence of particular mutations and decreased activity of DPD has been demonstrated. According to recommendations of pharmacogenetics consortia CPIC (from 2017) and DPWG (from 2019) the testing of presence

of four polymorphisms in DPYD gene: *2A (c1905+1G>A), *13 (c1679T>G), HapB3 (c1236G>A) and c2846A>T is recommended before administration of the above substances. Insufficient evidence has been gathered for other polymorphisms in relation of their effect on DPD enzyme activity.

Principle of detection

The kit is used for determination of genotype of four polymorphisms according to guidelines CPIC and DPWG: *2A (c1905+1G>A), *13 (c1679T>G), HapB3 (c1236G>A) and c2846A>T in human genomic DNA. The principle of detection is based on real-time PCR by fluorescently labeled probes (allelic discrimination).

Available products

Cat. No.	Product	rxn
3255-025	gb PHARM DPYD	25
3255-050	gb PHARM DPYD	50

1 kit contains reagents to provide 25 reactions (20 µl volume of each reaction).

Parameters of the diagnostic kit

- *in vitro* diagnostics
- CE IVD marked
- ready-to-use assay
- sample concentration 10-100 ng/µl
- positive and negative controls included
- FAM and HEX channels detection
- identical amplification profile as gb HEMO, gb GENETIC, gb PHARM kits

Content of the diagnostic kit

* Component	Conc.	Purpose
● Assay DPYD*2A (c1905+1G>A)	1.25×	Detection assay
● Assay DPYD*13 (c1679T>G)	1.25×	Detection assay
● Assay DPYD HapB3 (c1236G>A)	1.25×	Detection assay
● Assay DPYD c2846A>T	1.25×	Detection assay
● Standard WT DPYD	10 ⁴ cop/µl	Positive Control
● Standard MUT DPYD	10 ⁴ cop/µl	Positive Control
● Standard HET DPYD	10 ⁴ cop/µl	Positive Control
● Deionized Water		Negative Control

* Lid colour



Validated for cyclers

- CFX Opus 96 (Bio-Rad)
- CFX96/96Touch (Bio-Rad)
- Light Cycler 480/Cobas z480 (Roche Diagnostics)
- QuantStudio 5 (Applied Biosystems)
- RG 3000 (Corbett Research)

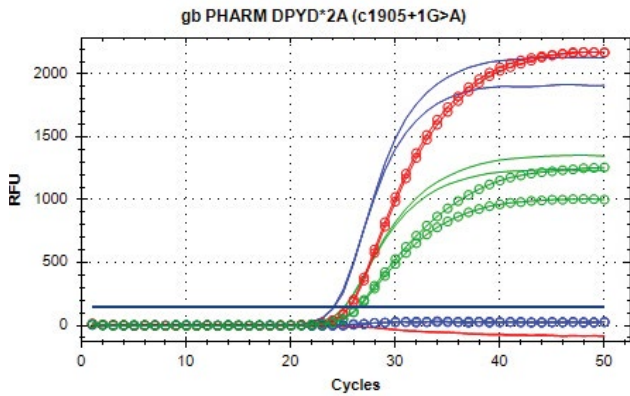


Fig. 1 – Detection of DPYD*2A (c1905+1G>A) standards on CFX96 device; blue line – wild type; red line – mutant; green line – heterozygote; smooth line – FAM channel; dotted line – HEX channel

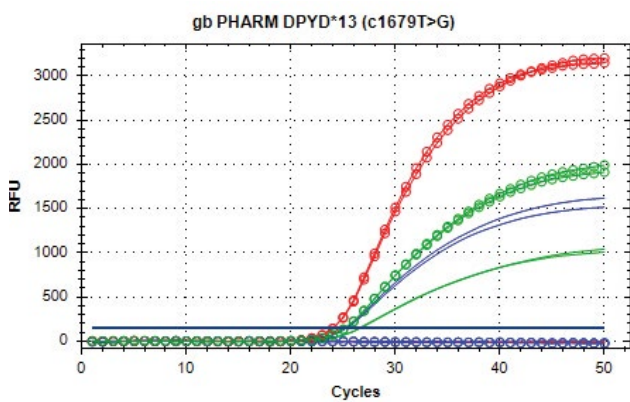


Fig. 2 – Detection of DPYD*13 (c1679T>G) standards on CFX96 device; blue line – wild type; red line – mutant; green line – heterozygote; smooth line – FAM channel; dotted line – HEX channel

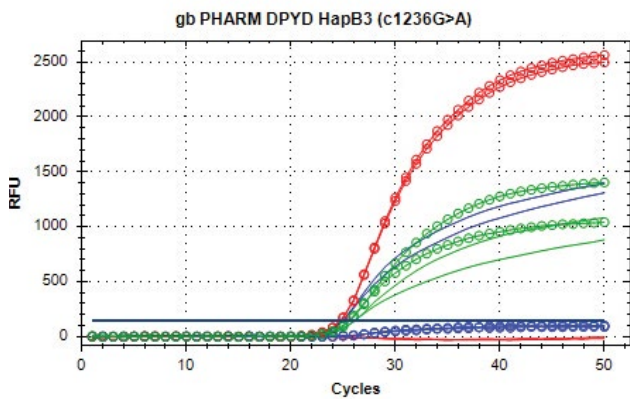


Fig. 3 – Detection of DPYD HapB3 (c1236G>A) standards on CFX96 device; blue line – wild type; red line – mutant; green line – heterozygote; smooth line – FAM channel; dotted line – HEX channel

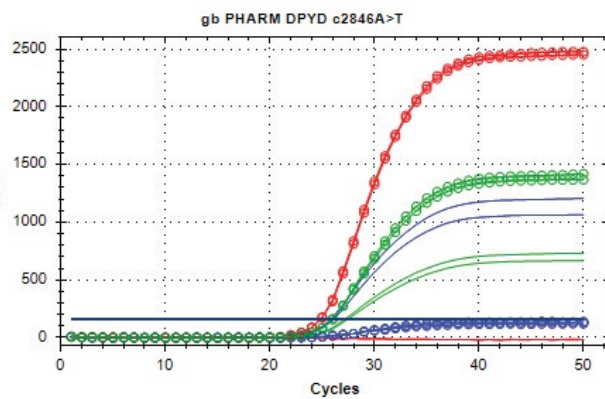


Fig. 4 – Detection of DPYD c2846A>T standards on CFX96 device; blue line – wild type; red line – mutant; green line – heterozygote; smooth line – FAM channel; dotted line – HEX channel