

## WB Quantitative and Diagnostic Kit for Human MTHFR gene (C677T & A1298C) Real-time PCR

### OUR CERTIFICATIONS

Our certifications

- ✓ ISO 13486:2016 certified
- ✓ ISO 9001: 2015 certified
- ✓ DPIIT (Govt. of India) certified
- ✓ Institutional Biosafety Committee (DBT)
- ✓ MSME Registered
- ✓ Trademark Registered with Trade Mark, Registry, Govt. of India

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### GRANTS/AWARDS

- ✓ Biotechnology Ignition Grant Award-2013
- ✓ Grand Challenge-TB Control - Bill and Melinda Gates Foundation | USAID | BIRAC, Govt. of India Phase-1 Grant -2015;
- ✓ Grand Challenge-TB Control - Bill and Melinda Gates Foundation | USAID | BIRAC, Govt. of India Phase 2 Grant-2017
- ✓ Grand Challenge Explorations- Bill and Melinda Gates Foundation | USAID | BIRAC, Govt. of India Grant-2017
- ✓ DBS-NUS Social Venture Challenge Asia 2017 Finalist.
- ✓ BIRAC (Dept. of Biotechnology) Pre- Accelerator MedTech Challenge Grant-2021
- ✓ Fastest Growing Indian Company Award (2019) – International Achievers Conference, Bangkok
- ✓ Small Business Innovation Research Initiative (SBIRI) (2013) –

### INTRODUCTION

- The N5, N10-methylenetetrahydrofolate reductase (MTHFR) is an enzyme that plays an important role in the metabolism of amino acid methionine
- Genetic polymorphism commonly associated with severe MTHFR deficiency is defined by a C to T substitution at position 677 (C677T) and A1298C defined by a A to C substitution at position 1298 of the MTHFR gene, which leads to the incorporation of amino acid alanine (A) instead of valine (V) at position 222 and glutamate to alanine substitution at codon 429 respectively of the MTHFR protein.
- The altered MTHFR is known as “Thermolabile MTHFR”. Homozygous and heterozygous carriers of these mutations both show reduced MTHFR activity.
- In particular, homozygous carriers suffer from significantly increased blood levels of homocysteine. In general, increased homocysteine levels are considered a risk factor of vascular diseases (e.g. arterial thrombosis)
- C677T mutation in its homozygous form alone or as a compound heterozygote, which involves both C677T and an A1298C condition (where an Adenine (A) residue changes to a Cytosine (C) residue at the 1298th position) lead to the disruption of the MTHFR gene and causes a drastic reduction of the MTHFR enzyme.
- This in turn, leads to an elevation of Homocysteine in the blood.
- WobbleBase MTHFR RT-PCR Detection Kit is an allelic discrimination real-time polymerase chain reaction (PCR) assay for qualitative detection of the mutation against a background of wild-type genomic DNA.
- In an allelic discrimination, two different probes specific for each allele are included in the PCR assay. Each probe is labeled with a different fluorescent dye (such as FAM or HEX/VIC) at its 5' end and contains a non-fluorescent quencher at the 3' end. During amplification of the target DNA the probes will compete for binding across the variant region.

### KEY FEATURES

- Rapid and extremely accurate tests.
- Based on allele discrimination its More reliable and highly reproducible assay.

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Dept. of Science and Tech., Govt. of India.

✓ TATA Health Fund (Phase 1 - Biosafety) – 2024

- Higher sensitivity (2% Mutant allele in background of 98% WT allele) and specificity.
- Amplification of wild type allele to check DNA Quality and Quantity.
- Easy work flow & compatible.

### SPECIFICATIONS

Technology	Real-Time PCR with hydrolysis probes
Type of Analysis	Qualitative and Quantitative
Target Sequence	C677T Polymorphism in the gene for methylenetetrahydrofolate reductase (MTHFR) A1298C Polymorphism in the gene for methylenetetrahydrofolate reductase (MTHFR)
Minimum DNA Concentration	50 ng/μL DNA
Analytical Specificity	100 %
Analytical Sensitivity (LoD with probability 95 %)	100%
Detected Genotypes	Wild and mutant alleles
Controls	Negative control, positive control
Reporting Units	MTHFR Mutant and wild allele DNA detected, not detected or inconclusive
Validated Specimen	Whole blood
Storage	-20 ± 5 °C
Required Detection channels	FAM,HEX(VIC)
Instrument	Compatible with a wide range of Real-Time PCR devices.

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CATALOG NUMBER	PRODUCT INFORMATION	CONTENTS
MTHFRQ/WBB/50	WB Quantitative MTHFR RT-PCR Detection Kit	50 Reactions
MTHFRQ/WBB/100	WB Quantitative MTHFR RT-PCR Detection Kit	100 Reactions
MTHFRD/WBB/25	WB Diagnostic RT-PCR kit for Detection of MTHFR	25 Reactions
MTHFRD/WBB/100	WB Diagnostic RT-PCR kit for Detection of MTHFR	100 Reactions