

## A contribution of Methylene tetrahydrofolate Reductase (MTHFR) gene polymorphisms in children with attention deficit hyperactivity disorder

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**Background:** Attention Deficit Hyper-Activity Disorder (ADHD) is a neuro-behavioral, complex disorder influenced by many genes. The MTHFR gene C677T and A1298C polymorphisms affect both nucleotide synthesis and DNA methylation. This study aimed to assess the relationship between Methylene tetrahydrofolate Reductase (MTHFR) gene polymorphisms and ADHD in a sample of Egyptian children.

**Methods:** MTHFR gene polymorphisms were evaluated in 60 participants, 30 ADHD patients and 30 controls of healthy children with normal developmental and psychiatric evaluation with comparable age and sex. The patients were recruited from Psychiatric clinic, Faculty of Postgraduate Studies for Childhood-Ain Shams University, Cairo, Egypt during the period from January to August 2015 with age ranged from 6 to 12 years. MTHFR C677T and A1298C alleles distribution was investigated via polymerase chain reaction (PCR) and reverse hybridization.

**Results:** The recorded genetic results showed heterozygous advantage (Heterosis) regarding studied C677T allele genotype with statistically significant association reported in controls compared to ADHD cases ( $p=0.0159$ ). Genotype

distributions of A1298C allele showed statistically high significant association with ADHD cases compared to controls ( $p=0.0002$ ). A significant association was found between males of ADHD cases and hetero- homozygous A1298C allele compared to controls ( $p=0.0079$ ). Meanwhile, ADHD females showed statistically significant higher distribution of the hetero- homozygous genotypes compared to controls ( $p=0.0072$ ).

**Conclusions:** There was an evident association between ADHD phenotype and MTHFR A1298C gene polymorphism, and there was a heterozygous advantage (Heterosis) regarding C677T allele genotype and ADHD cases leading to absence of association between MTHFR C677T gene polymorphism and ADHD

### Speaker Biography

Khaled Ismail AbdElShakoor has completed his PhD in January 2019 from Ain Shams University, Egypt. He is consultant of pediatrics in ministry of health hospitals, Egypt. He has some publications that has been cited several times and has been serving as an editorial board member of reputed medical Journals.

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