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DNA methylation of membrane-bound catechol-O-methyltransferase in Malaysian schizophrenia patients

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Abstract

Aim: This study examined catechol-O-methyltransferase (COMT) DNA methylation in the peripheral blood of schizophrenia patients and also in healthy controls to investigate its potential use as a peripheral biomarker of schizophrenia and its relations with the clinical variables of schizophrenia patients.

Methods: We examined the DNA methylation levels of COMT using genomic DNA from the peripheral blood of schizophrenia patients (n = 138) and healthy control participants (n = 132); all were Malaysian Malays. The extracted DNA was bisulfite converted, and the percentage methylation ratio value was calculated based on the results following a MethylLight protocol analysis.

Results: The percentage methylation ratio of COMT was lower in schizophrenia than it was in the healthy controls ($P < 0.001$) and was different between the body mass index ($P = 0.003$) and antipsychotic ($P = 0.004$) groups. The COMT DNA methylation rate was lower in patients receiving atypical antipsychotics ($P = 0.004$) and risperidone ($P = 0.049$) as compared to typical antipsychotics. The Excitement and Depressed subdomains of the Positive and Negative Syndrome Scale were inversely related ($P < 0.001$) and therefore predictors (Excitement: $b = -11.396$, $t = -4.760$, $P < 0.001$; Depressed: $b = -7.789$, $t = -3.487$, $P = 0.001$) of COMT DNA methylation.

Conclusion: Our results suggested that the methylation level was affected by the severity of the clinical symptoms of schizophrenia and might also be influenced by pharmacological treatment. The epigenetic alteration of COMT in the peripheral blood could be a potential peripheral biomarker of schizophrenia.

Keywords

Author Keywords: [COMT](#); [DNA methylation](#); [epigenetics](#); [genetics in psychiatry](#); [schizophrenia](#)

KeyWords Plus: [MB-COMT PROMOTER](#); [PERIPHERAL-BLOOD CELLS](#); [BIPOLAR DISORDER](#); [CLINICAL PHENOTYPES](#); [COGNITIVE FUNCTION](#); [WIDE ASSOCIATION](#); [GENE-EXPRESSION](#); [BRAIN](#); [HYPOMETHYLATION](#); [POLYMORPHISMS](#)

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