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## Association between DNA Methylation of the CUB and Sushi Multiple Domains 1 Gene and Schizophrenia

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### Abstract

**Introduction:** The CUB and Sushi multiple domains 1 protein (CSMD1) inhibits the complement cascade in neural tissues. Complement activation in the brain has been proposed as one of the pathogeneses for schizophrenia by causing excessive synapse pruning. A variant of the *CSMD1* gene is also associated with schizophrenia at genome-wide level and is linked with cognitive impairment. However, there is lack of study on DNA methylation of *CSMD1* in schizophrenia. Therefore, this study investigated the levels of *CSMD1* DNA methylation in schizophrenia and the relationship with symptom severity. **Methods:** In this case-control study, DNA methylation levels of *CSMD1* were compared between 183 schizophrenia patients (SZ) and 212 healthy controls (HC). The DNA methylation levels were quantified using MethyLight quantitative PCR assay on bisulfite-modified genomic DNA, purified from peripheral blood. The methylation levels were measured as percentage of methylated reference (PMR). Symptom severity was assessed in SZ using the Positive and Negative Syndrome Scale (PANSS). **Results:** There were lower *CSMD1* PMR values in SZ compared to HC ( $p = 0.001$ ). Additionally, there were negative correlation between *CSMD1* PMR values and positive PANSS scores ( $r_s = -0.206$ ,  $p = 0.005$ ). Age and ethnicity were also associated with *CSMD1* PMR values. **Conclusion:** These results suggest that hypomethylation of *CSMD1* could be one of the molecular bases for schizophrenia. Nevertheless, these results must be verified, and the mechanism of association must be determined in future studies.

**Keyword:** DNA methylation, CSMD1, schizophrenia,