# A meta analysis of the association between the SLC6A4 gene polymorphisms and bipolar disorder

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**Abstract**: Background: Bipolar disorder is a complex psychiatric disorder which genetic factors are known to contribute to its etiology. A number of studies have reported associations between the three polymorphisms of serotonin transporter gene (SLC6A4/5-HTT) and bipolar disorder. This study reports the effect of these three polymorphisms using meta analysis method. Materials and Methods: Electronic searches were performed using PubMed. In the extensive electronic literature search, keywords "5-HTT gene" and "bipolar disorder" were searched for prospective studies. The pooled effect sizes (ORs) along with 95% confidence intervals (CIs), in "cases" and "controls" groups for these three polymorphisms (5-HTTLPR, 5-HTTVNTR and 5-HTT 44bp insertion/deletion) were calculated. Further subgroup analyses were conducted if the data were available. Results: Twenty eight studies with 15005 participants (6333 cases and 8672 controls) were included in the analyses. The main analysis revealed that the "5-HTTVNTR" pooled OR is 1.070 ; 95%CI is (0.905 - 1.234) and its p-value is less than 0.0001. The "5-HTT 44bp insertion/deletion" pooled OR is 1.560 ; 95%CI= (0.113 - 3.007) and its p-value is 0.0349. For "5-HTTLPR" , pooled OR is 1.084 ; 95%CI is (1.016 – 1.152) and its p-value is less than 0.0001. Conclusions: From the p-value of "5-HTT 44bp insertion/deletion" polymorphism, which is 0.0349, we found that compared with the other 2 polymorphisms, it's not capable to cause bipolar disorder so much, as we know a p-value should be less than 0.05 ( 0.05) to be statistically significant, which is also true about this one. But we found the other two polymorphisms with the p-value 0.0001 are statistically significant. They indicate strong evidences against the null hypothesis. (The null hypothesis is a typical statistical theory which suggests that no statistical relationship and significance exists in a set of given single observed variable, between two sets of observed data and measured phenomena.) Keywords: SLC6A4, 5-HTT, bipolar disorder, polymorphism, 5-HTTLPR, 5HTTVNTR