

## MEETING ABSTRACTS

### **BUTYRYLCHOLINESTERASE AND ITS VARIANTS (rs3495 & rs1803274) ASSOCIATION WITH MAJOR DEPRESSIVE DISORDER**

**Sliha Awan<sup>1</sup>, Syed M Nurulain<sup>1</sup>, Sadaf Munir<sup>1</sup>, Sania Ghafoor<sup>1</sup>, Rabia Habib<sup>2</sup>, Maleeha Azam<sup>3</sup>**

<sup>1</sup> Department of Biosciences, COMSATS University, Islamabad, Pakistan.

<sup>2</sup> Functional Proteomics lab, Department of Biosciences, COMSATS University, Islamabad, Pakistan.

<sup>3</sup> Functional Genomics lab, Department of Biosciences, COMSATS University, Islamabad, Pakistan

Major Depressive Disorder (MDD) is a psychiatric condition. Globally, it is known to be the fourth leading source of ill health. Butyrylcholinesterase is a cholinergic enzyme with diversified reported functions. Objectives of the present study was to find the status of BChE in depressive individuals and to investigate the association of two SNPs of *BCHE* (rs3495; c.\*189G<A) and (rs1803274; c.\*1699G>A). Study was conducted with the approval from Ethical Review Board of the Department of Biosciences and consents from participants. Seventy six MDD patients and fifty four healthy controls were recruited for the study. Depressive individuals were diagnosed by the consultant psychiatrist. BChE activity was measured using plasma by Ellman's method. The blood samples were genotyped for rs3495 using polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP), and rs1803274 by allele refractory mutation system-polymerase chain reaction (tetra-primer ARMS-PCR). Biochemical estimation of BChE showed a significant decrease activity in MDD patients (0.020  $\mu\text{mol/L/min}$ ; n=54) than healthy controls (0.028  $\mu\text{mol/L/min}$ ; n=76). Genetic analysis revealed no significant association for rs3495. However, the statistical analysis of the genotyped data of rs1803274 showed statistically significant association under dominant model (OR: 2.32; 95% CI: 1.09-4.96; p-value =0.025). Homozygous GG genotype was higher in control (p-value=0.01) as compared to the cases. Significant result was also noted in allele frequency distribution (p-value =0.01). The study concludes that BChE may have a tentative role in pathophysiology of MDD. Genetic association of rs1803274 with the disease is also evident. A further study with different ethnic groups is suggested.

**Keywords:** *Butyrylcholinesterase; rs3495; rs1803274; Major depressive disorder*