Potential role of celecoxib and omega-3 fatty acids as adjuvant therapy with risperidone in experimentally-induced schizophrenia: possible effects on lysosomal membrane integrity and neuroinflammation

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Schizophrenia is a complex psychiatric disorder which markedly diminishes quality of life by its effects on cognitive, behavioral and emotional areas of functioning. The exact mechanism by which schizophrenia evolves is still unknown. Genetic, environmental factors, neurotransmitter, inflammation and oxidative stress are involved in pathophysiology of schizophrenia. β-glucuronidase is a member of the lysosomal glycosidase family that catalyzes breakdown of complex carbohydrates (hydrolysis of β-D-glucuronic acid residues) from the non-reducing end of mucopolysaccharides. The present study aimed to investigate the possible effects of celecoxib and omega-3 fatty acids on inflammation and lysosomal integrity as pathophysiological markers of schizophrenia. In the present study, amphetamine-treated rats received either risperidone, celecoxib, omega-3 fatty acids, risperidone plus celecoxib or risperidone plus omega-3. The effects of treatment on brain β-glucuronidase enzyme activity and inflammatory markers including IL-6, Cox-2 and NF-kB were evaluated. Treatment with celecoxib or omega-3 fatty acids alone significantly reduced neurotoxicity which was indicated by reduction of brain β-glucuronidase enzyme activity. The anti-inflammatory effects of celecoxib and omega-3 fatty acids were indicated by reduction of brain IL-6 level and decreased expression of brain Cox-2 and NF-kB. Addition of celecoxib or omega-3 fatty acids to risperidone also potentiated its effects on the measured parameters. In conclusion, celecoxib and omega-3 may be promising candidates as adjuvant therapy with risperidone to enhance its outcomes in schizophrenia.

Recent Publications

Biography

Enass Y Osman is a Lecturer of Pharmacology and Toxicology, Faculty of Pharmacy, Tanta University, Egypt. Her expertise lies in pharmacotherapy and improvement of patients’ compliances especially those with psychiatric disorders. My publications are directed toward introduction of new drugs for treatment of schizophrenic patients for improving their life. The paper is based on previous publications by Abeakawa et. al. (2008) who used amphetamine for induction of schizophrenia in animals. Our researches aimed to investigate potential effects of drugs other than classical antipsychotics as adjuvant therapies in schizophrenia.

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