

The activation of the immune/inflammatory system is associated with the stress-induced anhedonia in rats: effect of pharmacological intervention

Rossetti A.C.¹, Macchi F.¹, Racagni G.¹, Papp M.², Riva M.A.¹ and Molteni R.¹

¹Department of Pharmacological and Biomolecular Sciences, University of Milan, Milan (Italy); ²Institute of Pharmacology, Polish Academy of Sciences, Krakow, Poland

Major depressive disorder (MDD) is a common disorder that represents a leading cause of disability in the world. It is thought originate from the interaction between susceptibility genes and environmental events, such as stress, to which an individual can be exposed in different moments of life. One of the major problems of depression is the relevant percentage of patients who do not show an adequate response to antidepressant therapy, as well as the high rate of relapse. Growing evidence suggest that the activation of the inflammatory/immune system contributes to the pathogenesis of depression. In particular, depression shows elevated comorbidity with cancer, arthritis rheumatoid, cardiovascular and neurodegenerative disease, characterized by inflammatory alteration. In addition, elevated blood levels of the pro-inflammatory cytokines including interleukin (IL)-1 β , interleukin (IL)-6 and tumor necrosis factor (TNF)- α are commonly found in depressed patient.

On these bases, it is important to characterize the changes of immune/inflammatory response in animal models of depression in order to establish their relationship with the depressive phenotype as well as the involvement in antidepressant response.

Accordingly, the first aim of this study was to evaluate the inflammatory response of rats exposed to a chronic mild stress (CMS) paradigm, which represents a well-established animal model of depression. Next, a group of animals was treated with the antidepressant imipramine or the antipsychotic drug lurasidone, in order to evaluate the ability of the treatment to interfere with inflammatory alterations produced by the stress procedure.