

Cytokine–serotonin interaction through IDO: a neurodegeneration hypothesis of depression

A. M. Myint,¹ Y. K. Kim²

¹University of Maastricht, The Netherlands; ²Korea University College of Medicine, Seoul, Republic of Korea

Summary There are different theories and hypotheses related to the aetiology of depression. The interaction between brain 5-HT level and the activity of its autoreceptors plays a role in mood changes and depression. In major depression, activation of the inflammatory response system (IRS) and, increased concentrations of proinflammatory cytokines, prostaglandin E2 and negative immuno-regulatory cytokines in peripheral blood have been reported. Recently, pro-inflammatory cytokines have been found to have profound effects on the metabolism of brain serotonin through the enzyme indoleamine-2,3-dioxygenase (IDO) that metabolizes the tryptophan, the precursor of 5-HT to neurodegenerative quinolinate and neuroprotective kynurenate. The cytokine–serotonin interaction that leads to the challenge between quinolinate and kynurenate in the brain explains the neurodegeneration hypothesis of depression.

© 2003 Elsevier Ltd. All rights reserved.