A multidimensional approach to depression

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Abstract

Major depressive disorder (MDD) is a prevalent condition associated with potential disability. Given that monoamine-based antidepressant therapies fail to address many important needs and associated side effects may be burdensome, more effective and safe interventions are needed. Omega-3 polyunsaturated fatty acids (PUFAs) may be one such option and there is growing interest for nutritional supplements worldwide. Several lines of evidence suggest that diminished omega-3 PUFAs concentrations are associated with MDD. The shift away from traditional dietary patterns, including fish and seafood rich in omega-3 PUFAs, has been associated with increased rates of depression. Patients show lower levels of omega-3 PUFAs in body tissues. In addition, supplemental omega-3 PUFAs have shown efficacy to improve depressive symptoms and proven to be a very safe and well tolerated treatment. At the molecular level, Omega-3s have shown anti-inflammatory, antioxidant and neuroprotective effects, which are strikingly similar to those of conventional antidepressants, and might explain their clinical benefits in mood disorders. The active antidepressant component from omega-3 PUFAs is eicosapentaenoic acid (EPA). The reason why EPA is more effective than docosahexaenoic acid (DHA) in the treatment of MDD is not yet elucidated, but one of the mechanistic underpinnings may involve anti-inflammation. Increasing evidence suggests that inflammation plays an important role in the pathophysiology of MDD. For instance, elevated levels of pro-inflammatory cytokines have been consistently shown in MDD patients and the induction of a pro-inflammatory state facilitates ‘sickness behaviour’ resembling depressive symptoms. EPA has a stronger anti-inflammatory effect than DHA. This presentation will critically update the clinical evidence for the use of omega-3 PUFAs in MDD, with a focus on inflammation. The potential preventative and therapeutic efficacy of these compounds will be considered.