Personalize medicine with omega-3 fatty acids for depression

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Depression is one of the leading causes of morbidity and mortality in medicine. Current available treatments clearly do not meet clinical needs, while clinicians and researchers are facing the huge challenge of developing effective depression treatments despite of the advance of neurosciences. As detailed in our Consensus Statements in the Lancet Psychiatry and World Psychiatry, nutritional medicine is a promising strategy for the crisis of under-effectiveness in depression treatment (1,2). Omega-3 polyunsaturated fatty acids (PUFAs), including eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), have a range of neurobiological activities in modulation of neurotransmitters, anti-inflammation, anti-oxidation and neuroplasticity, by which could contribute to the antidepressant effects (3-5). Evidence from epidemiological, pre-clinical, and clinical studies have revealed that omega-3 PUFAs play an important role in the treatment and prevention of certain subgroups of clinical depression (6-9). According to biological specificity and safety consideration, omega-3 PUFAs is a potential antidepressant treatment for pregnant women, children, adolescents, and inflammation-related depression. Omega-3 PUFAs are well tolerated and accepted by general populations for health promoting (10). Thus, more research on stratifying depression is needed to justify the clinical application of omega-3 PUFAs as one of the first-line antidepressant treatments in specific populations with depression.