

## Benefits to women during menopause

Interest in non-hormonal therapies for the treatment of menopause-related disorders increased after publication of the results from the Women's Health Initiative Study. This study failed to demonstrate some of the preventative benefits associated with hormone treatment and even suggested there were associated risks.(1)



### Effect on hypertriglyceridemia

In general, postmenopausal women have higher triglyceride concentrations than premenopausal women. It is well known that high triglyceride levels are associated with cardiovascular diseases, especially in women. The powerful effects of long-chain Omega-3 polyunsaturated fatty acids (LC-PUFAs) on triglycerides make them even more important among this group. This is particularly significant in the case of women receiving hormone therapy, as this can increase triglyceride levels.(2,3) A study on the effects of DHA supplements on risk factors for cardiovascular disease among postmenopausal women found that treatment with DHA was associated with a 20% reduction in triglyceride concentrations, an 8% increase in HDL-C concentrations, a 28% reduction in TG/HDL-C and a 7% decrease in heart rate.

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### Effect on depressive disorders

Women are twice as likely to suffer depression than men, the risk being even greater during and after menopause.(5-7) The causes of depression (disorder involving serotonin receptors and membrane transport in particular) is multifactor in origin and includes genetic, environmental and nutritional factors. The nutritional element is based on studies where an increased correlation was observed between Omega-3 LC-PUFA, DHA(8) and/or EPA(9) levels in erythrocytes or adipose tissue and depressive symptoms, (10,11) and also on studies where lower tissue or plasma levels of Omega-3 LC-PUFAs (especially DHA) were found in subjects with depression than in non-depressed subjects.(12,3) In studies in which an EPA and DHA supplement was administered to patients receiving antidepressant treatment, patients' symptoms improved significantly compared to groups receiving placebo as a supplement.(14-15)

### Osteoporosis

Osteoporosis involves destruction of bone or reduced bone formation. Pharmacological treatment is incapable of restoring good quality bone in a skeleton with osteoporosis, although it does delay bone loss.(16) It is notable that the risk of suffering cardiovascular disease is directly proportional to the severity of osteoporosis in post-menopausal women.(17) In animal studies, ingestion of Omega-3 LC-PUFA reduced the capacity for bone destruction and the loss of bone mass in ovariectomized mice.

### Vasomotor symptoms

Finally, though of no less importance with respect to the quality of life of menopausal women, there are data to suggest that Omega-3 LC-PUFAs

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are effective in treating the vasomotor symptoms of menopause. Such vasomotor symptoms include hot flushes and sweating occurring during the menopausal transition period and lasting until after the last menstruation. The mechanism by which Omega-3 LC-PUFAs exert this effect is related to serotonin transmission, as is also the case with antidepressants (in particular selective serotonin reuptake inhibitors - SSRIs), which have been shown to reduce vasomotor symptoms.(21,22) Serotonin is involved in the control of body temperature homeostasis. Also, plasma concentrations of PUFAs are predictors for levels of 5-hydroxyindolacetic acid (HIAA), the main serotonin metabolite, in the cerebrospinal fluid (CSF).(21) It is thought that changes in the ingestion or metabolism of LC-PUFA could play an important role in the serotonin reuptake rate mediated by their significant presence in neuronal tissue, particularly in the neuronal membranes(23) (if the serotonin concentration increases or its reuptake decreases, it remains longer in the synapses and interstitial spaces).

Depression and vasomotor symptoms are usually associated during menopausal transition and women who suffer from hot flushes have a greater risk of developing a major depressive disorder. (24)

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