

**Table 3**  
Cardioprotective effects associated with EPA and DHA along with the possible mechanisms

Effect	Mechanism
Strong antiarrhythmic effect	Reduction in malignant ventricular arrhythmias via enrichment of cardiac lipids thereby preventing the development of ventricular tachycardia and fibrillation.
Increase in heart rate variability	By increasing parasympathetic tone, inhibition and/or alteration of cytokine levels, altering the levels of mitogens and other factors.
Antithrombotic effect	Via inhibition of thromboxane A2 in the arachidonic acid cascade, reducing platelet activity, enhancing the production of prostacyclins (pro-vasodilatory) and by lowering postprandial lipemia thereby lowering the pro-coagulant activated factor VII.
Inhibitory effect on atherosclerosis	By regulating plasma cholesterol concentrations, by inhibiting monocyte migration into the plaque and through stimulation of endothelial production of nitric oxide.
Hypolipidemic effect	Lowers plasma cholesterol and triacylglycerol concentrations by inhibiting triacylglycerol and very low density lipo-proteins (VLDL) synthesis in liver and by stimulating the synthesis of membrane phospholipids. This also aids in preventing obesity related problems.
Antiinflammatory effect	Through inhibition of smooth cell proliferation, altered eicosanoid synthesis (especially PGE2 and LTB4) and by reducing the expression of cell adhesion molecules. By salvaging cardiomyocytes from hypoxia/re-oxygenation induced damage.

Sources: Gordon and Ratliff<sup>(2)</sup>; Connor<sup>(16)</sup>; Holub<sup>(25)</sup>; Goodnight et al.<sup>(75)</sup>; Phillipson et al.<sup>(99)</sup>; Weiner et al.<sup>(100)</sup>; Davis et al.<sup>(101)</sup>; Haris et al.<sup>(102)</sup>; Shimokawa and Vanhoutte<sup>(103)</sup>; Benner et al.<sup>(104)</sup>; Harris et al.<sup>(105)</sup>; Larsen et al.<sup>(106)</sup>; Nasa et al.<sup>(107)</sup>; James et al.<sup>(108)</sup>; Holman et al.<sup>(109)</sup>

fatty acid in several phospholipid molecules of brain and retina. It is essential for brain function<sup>(32-35)</sup> and vision.<sup>(34,36)</sup> It has also been reported that the time during fetal development, and the time until the completion of biochemical points in the brain and retina after birth are the critical periods during which this essential fatty acid is acquired.<sup>(16)</sup> The retinal and cell membrane functions in which DHA can be considered essential are summarized as shown in Table 4. There are reports of lower intelligence quotients in formula-fed infants than those fed human milk.<sup>(37)</sup> This was attributed to the fact that formula-fed infants had lower brain DHA concentrations as compared to the human milk fed infants.<sup>(38,39)</sup> It has been reported that all the fatty acids including DHA get transferred across the placenta into fetal blood.<sup>(40)</sup> EPA and DHA in maternal adipose tissue can be mobilized as free fatty acids bound to albumin and be made available for the developing fetus via transport. In several studies involving monkeys, low DHA concentrations in plasma and red blood cells in the infant at birth have been reported to be directly related to the DHA deficient maternal diet.<sup>(40,41)</sup> The deficiency of this important n-3 fatty acid gets manifested in blood and in tissue biochemistry.<sup>(32,41,42)</sup> In experiments involving human subjects, it has been reported that pregnant women administered with fish oil or