

Effects of essential fatty acids on mediators of mast cells in culture.

Gueck T, Seidel A, Fuhrmann H.

Faculty of Veterinary Medicine, Institute of Physiological Chemistry, University of Leipzig, An den Tierkliniken 1, D-04103, Leipzig, Germany. gueck@vetmed.uni-leipzig.de

The objective of this study was to investigate the effects of alpha-linolenic acid (18:3n-3) and linoleic acid (18:2n-6) on the fatty acid composition and the activity and release of mast cell mediators in the canine mastocytoma cell line C2. Cells were cultured in Dulbecco's modified Eagle's medium mixed with 50% Ham's F12 (containing linoleic acid 0.14 micro M). The basic medium (DEH) was supplemented with 0.14 micro M alpha-linolenic acid. 14.0 micro M alpha-linolenic acid (DEH-n-3) or 14.0 micro M linoleic acid (DEH-n-6) was added. Eight days after culturing of C2 in DEH-n-3 we measured elevated levels of n-3 fatty acids up to 22:3. The tryptase activity and the stimulated PGE2 production and histamine release were reduced. In contrast, after culturing of C2 in DEH-n-6 we determined elevated levels of n-6 fatty acids up to 20:3, increased tryptase activity and stimulated histamine release. Thus 18:3n-3 has anti-inflammatory effects in cultured canine mastocytoma cells.