Figure 1: Start and finish of a physiological inflammatory reaction in wound healing and situations of microbial challenge.

Cellular damage and leakage of alarmins attract neutrophils to the damaged area (PMN's). Sympathetic afferents activate the locus coeruleus (central nucleus of the sympathetic nervous system, SNS) and Noradrenaline (Norepinephrine, NE) is released. The released NE activates the adrenal medulla inducing the production of systemic catecholamins that supports the activation of the PMN. Damaged blood vessels are a source of an omega 3 rich edema (EPA and DHA). DHA and EPA inhibit LOX-5 directly and through conversion into resolvins and protectins. Both PGE2 and PGD2, produced by the breakdown of AA by COX-2 activity, will now override the strong chemotaxic effect of LTB4. The combined action of protectins, resolvins and lipoxins produced out of AA will put a hold on the pro-inflammatory activity of PMN's, which is supported by the increased production of systemic cortisol. Cortisol further activates macrophages (M-Ph) to phagocytose issue debris and quiet PMN by releasing substances such as LXA4, RvE1, PD1, FGF, VEGF, EGF.

Migration to and adhesion on damaged tissue/cells PMN

Edema DHA-EPA

Damage to blood vessels - Edema

LXA4, RvE1, PD1, FGF, VEGF, EGF

Migration to and adhesion on damaged tissue/cells PMN

ED6

(LOX-5)[COX-2]PGE2 + PGD2 >> LTB4[LOX-5]

PMN Resolvins-Protectins

Quiescent PMN

Tissue repair Angiogenesis

Clearance FINISH

Tissue/cell Debris

M-Ph

Cortisol[HPA] + Acetylcholine >> Noradrenalin + Adrenalin[SNS]

Damage to cell membrane Leakage of cytoplasmatic alarmins

Mechanical/chemical Injury, microbial invasion

PLATELET AND PMN LIPOXINS FROM AA [LOX-12, LOX-15, ACETYLATED COX2]