Ana L. Alessandri, Lirlândia P. Sousa, Christopher D. Lucas, Adriano G. Rossi, Vanessa Pinho, Mauro M. Teixeira (2013). Resolution of inflammation: Mechanisms and opportunity for drug development. *Pharmacol Ther*. Aug;139(2):189-212

Inflammation is a beneficial host reaction to tissue damage and has the essential primary purpose of restoring tissue homeostasis. Inflammation plays a major role in containing and resolving infection and may also occur under sterile conditions. The cardinal signs of inflammation *dolor*, *calor*, *tumor* and *rubor* are intrinsically associated with events including vasodilatation, edema and leukocyte trafficking into the site of inflammation. If uncontrolled or unresolved, inflammation itself can lead to further tissue damage and give rise to chronic inflammatory diseases and autoimmunity with eventual loss of organ function. It is now evident that the resolution of inflammation is an active continuous process that occurs during an acute inflammatory episode. Successful resolution requires activation of endogenous programs with switch from production of pro-inflammatory towards pro-resolving molecules, such as specific lipid mediators and annexin A1, and the non-phlogistic elimination of granulocytes by apoptosis with subsequent removal by surrounding macrophages. These processes ensure rapid restoration of tissue homeostasis. Here, we review recent advances in the understanding of resolution of inflammation, highlighting the pharmacological strategies that may interfere with the molecular pathways which control leukocyte survival and clearance. Such strategies have proved beneficial in several pre-clinical models of inflammatory diseases, suggesting that pharmacological modulation of the resolution process may be useful for the treatment of chronic inflammatory diseases in humans.