The inflammatory response is a physiological process that has the major role of restoring tissue homeostasis. However, uncontrolled or unresolved inflammation may cause tissue damage and contribute to the pathogenesis of chronic inflammatory and autoimmune diseases. Current pharmacological therapies to treat inflammatory maladies focus on inhibition of the productive phase of the inflammatory response including inhibition of leukocyte influx. Resolution of inflammation is an active process, which relies on the production of pro-resolving molecules and activation of intracellular pathways. Here, we will discuss mechanisms and therapeutic potential of pharmacological strategies, which accelerate resolution in animal models of acute inflammation by mimicking or inducing natural pathways of resolution phase of inflammation.