

## Anti-Inflammatory Effect of Carvedilol 1% Ointment in Topical Application to the Animal Model

**Authors :** Berina Pilipović, Saša Pilipović, Maja Pašić-Kulenović

**Abstract :** Inflammation is the body's response to impaired homeostasis caused by infection, injury or trauma resulting in systemic and local effects. Inflammation causes the body's response to injury and is characterized by a series of events including inflammatory response, response to pain receptors and the recovery process. Inflammation can be acute and chronic. The inflammatory response is described in three different phases. Free radical is an atom or molecule that has the unpaired electron and is therefore generally very reactive chemical species. Biologically important example of reaction with free radicals is called Lipid peroxidation (LP). Lipid peroxidation reactions occur in biological membranes, and if at the outset is not stopped with the action of antioxidants, it will bring damage to the membrane, which results in partial or complete loss of their physiological functions. Calcium antagonists and beta-adrenergic receptor antagonists are known drugs, and for many years and widely used in the treatment of cardiovascular diseases. Some of these compounds also show antioxidant activity. The mechanism of antioxidant activities of calcium antagonists and beta-blockers is unknown, since their structure varies widely. This research investigated the possible local anti-inflammatory activity of ointments containing 1% carvedilol in the white petrolatum USP. Ear inflammation was induced by 3% croton oil acetone solution, in quantity of 10  $\mu$ l on both mouse ears. Albino Swiss mouse (n = 8) are treated with 2.5 mg/ear ointment, and control group was treated on the same way as previous with hydrocortisone 1% ointment (2.5 mg/ear). The other ear of the same animal was used as control one. Ointments were administered once per day, on the left ear. After treatment, ears were observed for three days. After three days, we measured mass (mg) of 6 mm ear punch of treated and controlled ears. The results of testing anti-inflammatory effects of ointments with carvedilol in the mouse ear model show stronger observed effect than ointment with 1% hydrocortisone in the same basis. Identical results were confirmed by the difference between the mass of 6 mm ears punch. The results were also confirmed by histological examination. Ointments with carvedilol showed significant reduction of the inflammation process caused by croton oil on the mouse inflammation model.

**Keywords :** antioxidant, carvedilol, inflammation, mouse ear

**Conference Title :** ICBDDS 2017 : International Conference on Biopharmaceutics and Drug Delivery Systems

**Conference Location :** Venice, Italy

**Conference Dates :** June 21-22, 2017