



## BENZYDAMINE LOCAL ANESTHETIC ACTIVITY AND [<sup>3</sup>H]-BATRACHOTOXIN BINDING SITES

Mangano G., Apicella C., Vitiello M., Milanese C., Polenzani L.

ACRAF SpA, S.Palomba-Pomezia, Rome, Italy

A peculiar feature of benzydamine is to account all in one molecule antiinflammatory, analgesic and local anesthetic activity. Local anesthetics are drugs that reversibly block nerve conduction when applied locally in appropriate concentrations. Benzydamine shares with the known local anesthetics the structural feature of an aromatic (hydrophobic) ring structure linked to a basic tertiary amine group (hydrophilic) by a short alkyl chain. The aim of the present study was to investigate the affinity of benzydamine for the batrachotoxin site in a radioligand binding assay. This site has been suggested to be involved in the action of local anesthetic at the sodium channel level (1). Binding was performed using rat cerebral cortex homogenates with 10 nM [<sup>3</sup>H]batrachotoxin used as specific radioligand (2). Veratridine 300μM was used to determine the non specific binding. Compounds were tested in duplicate at seven concentrations ranging from 0.01 μM to 100 μM. Non-linear, least squares regression analysis was performed on percent of inhibition of specific binding. Benzydamine showed an IC<sub>50</sub> of 7μM with Hill number of 1.7. In the same experimental condition veratridine and lidocaine resulted in an IC<sub>50</sub> of 4μM and 190μM, respectively. The obtained IC<sub>50</sub> values suggest a different site of action for benzydamine and lidocaine. These results add further elements to understand the mechanism of benzydamine local anesthetic activity and support the in vivo effects observed in surface anesthesia on the cornea of rabbits and in the conduction anesthesia on the mouse tail.

(1) HL Li, D Hadid, and DS Ragsdale (2002) Mol.Pharmacol. 61: 905-912.

(2) Brown GB (1986) J.Neurosci. 6: 2064-2070.