

Stable Gastric Pentadecapeptide BPC 157 Antagonized Local Anesthetic Effect of Lidocaine

Pavla Peraić^a, Dominik Malekinuić^a, Emma Orešković^a, Borna Vrdoljak^a, Filip Radevski^a, Josh Fry^a, Oliver Marcel Koltay^a

^a*School of Medicine University of Zagreb*

Pavla Peraić (0000-0002-1733-5443), Dominik Malekinušić (0000-0001-6258-5647), Emma Orešković (0000-0003-4956-3181), Borna Vrdoljak (0000-0003-2306-8799), Filip Radevski (0000-0001-7556-1652), Josh Fry (0000 – 0003 – 1280 - 7576), Oliver Marcel Koltay (0000-0003-3820-196X)

Key words: BPC, lidocaine, antagonize

Pentadecapeptide BPC 157 was previously shown as a cardioprotective compound in a model of arrhythmia induced by bupivacaine toxicity where it counteracts arrhythmias and prevents lethal outcome much like in other cardiotoxicity mainly related to potassium disturbances, both hyperkalemia and hypokalemia, in vivo and in vitro. We wanted to explore does BPC 157 antagonize effect of lidocaine. We used Wistar Albino male rats, underwent regional blocks with lidocaine (spinal intrathecal block (lidocaine 6 mg/kg, 0.1 ml/rat, 550 gb.w.) or axillary block (lidocaine 15 mg/kg, 0.3 ml/rat, 220 g b.w.)). Rats received BPC 157 (10 µg, 10 ng, 10 pg/kg intraperitoneally or intragastrically) or an equivolume of saline (5 ml/kg), either immediately or at 10 min when local anesthesia was fully established. While lidocaine application produced a prolong function failure, all BPC 157 regimens significantly shortened time to full function recovery in the conditions of full local anesthesia. In other experiments, using a hot plate (55°C for 3 minutes) when rat hind paws were infiltrated with 2% lidocaine (0.1 ml/paw), a subsequent infiltration with BPC 157 (10 µg, 10 ng, 10 pg/kg) results in the faster feet lifting and much less edema. ECG recording documented that the regimens of BPC 157 counteracted the lidocaine-induced arrhythmias. Therefore, it may be possible that BPC 157 acts as the missing antidote to local anesthetics, and potentially deleterious and even life threatening adverse effects of toxic doses of local anesthetics would be markedly attenuated or even abolished.