ADMINISTRATION OF POLYMERIC NANOCAPSULES AFFECTS BLOOD PRESSURE OF RATS

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The nanotechnology allows drug delivery in a nanometer scale, thus increasing bioavailability, specificity, in addition to a reduced dose required for pharmacological effect. Most of the drugs are administered intravenously however the effects of the polymeric nanocapsules in the cardiovascular system are still unknown. The objective of this study was to investigate the effects of polymeric nanocapsules on blood pressure and cardiac electric activity in rats. For that, three-month-old male Wistar rats were equally assigned into two groups: Control (Ct - Saline solution- i.v) and Nano (NB - polymeric nanocapsules - 25mg / kg - i.v). After anesthesia (Urethane-1.2g/kg), the jugular vein was cannulated (administration of substances), as well as, the carotid artery to record systolic blood pressure (SBP), diastolic blood pressure (DBP) and heart rate (HR). The electrocardiogram (ECG) was performed in derivation D3. After 30’ of stabilization time, NB or SF was administered and the data were collected at times 0, 5, 10, 15, 20, 25 and 30’. Data are expressed as mean ± SEM and analyzed by one-way ANOVA followed by Tukey test (*P<0.05). After 5’ of administration the NB increased SBP (t0: Ct: 118.8 ± 5.0 and NB: 120.4 ± 4.1 mmHg vs t5’: Ct: 128.2 ± 3.8 and NB: 148.6 ± 16.4*mmHg), DBP (t0: Ct: 85.4 ± 13.5 and NB: 86.3 ± 3.6 mmHg vs t5’: Ct: 89.4 ± 5.8 and NB: 95.9 ± 4.9*mmHg) and reduced HR (t0: Ct: 327.8 ± 5.6 and NB: 333.4 bpm vs t5’: Ct: 336.1 ± 8.1 and NB: 282.9 ± 10.6*bpm). These alterations were maintained until 30’. ECG traces did not change with the polymeric nanocapsules administration. These results suggest that the administration of polymeric nanocapsules intravenously negatively affects blood pressure and heart rate.

Key Words: polymeric nanocapsules, electrocardiogram, blood pressure.
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