ACUTE AND CHRONIC EFFECTS OF NORTRIPTYLINE ON ECTO-NUCLEOTIDASES IN CEREBRAL CORTEX AND HIPPOCAMPUS OF RATS

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Nortriptyline, a tricyclic antidepressant, increases the bioavailability of norepinephrine and serotonin in the synaptic cleft. Studies have shown the effect of antidepressant drugs on some ATPases, but there are no reports about their actions on the ecto-nucleotidases, which control ATP and adenosine levels. Here we investigated the effect of acute and chronic treatments of nortriptyline on the ecto-nucleotidases in rat brain synaptosomes. Nortriptyline (10 mg/Kg, i.p.) decreased ATP and ADP hydrolysis in synaptosomes from hippocampus after acute treatment (20 and 40%; 117±13 and 35±7.9 nmolPi/min/mg, respectively) when compared to the control (147.4±11.3 and 59.6±6.9 nmolPi/min/mg for ATP and ADP hydrolysis, respectively). This profile has not been observed in the chronic treatment (10 mg/kg, i.p. during 14 days). The acute treatment with nortriptyline decreased ADP hydrolysis (49%; 99±8.6 nmolPi/min/mg) in cerebral cortex when compared to the control group (66.7±8.7 nmolPi/min/mg). For the chronic treatment, this drug promoted an activation in the hydrolysis of all nucleotides (31%; 38% and 81% for ATP, ADP and AMP hydrolysis, respectively) in cerebral cortex. Our results have shown this antidepressant can modulate the extracellular nucleotide hydrolysis in acute and chronic treatment. These data pointed out for another pharmacological mechanism of this drugs which can influence its final effects.

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