MORPHINE TREATMENT IN EARLY LIFE ALTERS NTPDASE ACTIVITY IN RAT BLOOD SERUM

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Introduction: The E-NTPDase enzymes are the major regulators of purinergic signaling in the blood. The E-NTPDases hydrolyze ATP and ADP, while 5'-nucleotidase hydrolyzes AMP to adenosine. It has been shown that ATP stimulates a nociceptive response, although the adenosine mediates a component of morphine analgesia. Aim: The aim of this study was to evaluate whether morphine exposure in early life, from postnatal day 8 (P8) until P14, alters NTPDases and 5´-nucleotidase activities in the short, medium and long term in blood serum of rats. Methods and Results: Male Wistar rats were divided into two groups: saline control (C) and morphine treatment (M) (5 µg). Each animal received the treatment in the mid-scapular area once a day for seven days. The enzyme assays were carried out on samples at P16, P30 and P60. The statistical analysis was performed using Student\'s t test. Differences between groups were considered significant at Pmenor0.05. At P16, we did not observe any difference in nucleotides hydrolysis. At P30 the morphine group exhibited an increase in ATP hydrolysis and at P60 a decrease in ADP hydrolysis in blood serum. Conclusion: It is probable that the two different NTPDases are carrying out the same function, one hydrolyzing preferentially ATP and the other hydrolyzing ADP slowly. The nucleotide hydrolysis profile may lead to an increase in the ADP availability at the peripheral level. Our findings highlight the importance of NTPDases in regulating nucleotide levels in rats exposed to morphine. Financial support: This research was supported by GPPG of Hospital de Clínicas de Porto Alegre, CNPq, PROPESQ-UFRGS, CAPES, FAPERGS.