

We have shown that the median raphe nucleus (MRN) is involved in the control of contextual fear conditioning. Besides, electrolytic lesion of MRN causes signs of behavioral disinhibition with an increase in the locomotor activity measured in an open field. In this work we extend this study by analyzing the behavioral and autonomic responses in a contextual and classical (light or tone/foot-shock pairings) fear conditioning paradigms in rats with either neurochemical lesion with N-Methyl-D-Aspartate (NMDA) or microinjected with 8-hydroxy-2-(di-n-propylamino) tetralin (8-OH-DPAT) into the MRN. The animals received NMDA, 8-OH-DPAT or saline microinjections into the MRN and were submitted to conditioning trials in an experimental chamber where they received ten foot-shocks (0.7 mA, 1 sec, variable interval between 10 and 50 sec) paired with the context, light or tone. The next day, animals were tested either in the same or in a different experimental chamber in the presence of light or tone, where the duration of freezing, number of rearings, bouts of micturition and number of fecal boli were recorded. Context, light or tone alone caused a significant amount of freezing. This freezing behavior was clearly inhibited in rats with NMDA lesions or with 8-OH-DPAT microinjections in the MRN tested in contextual conditioning or light/foot-shock association, but not in the conditioning fear test with tones. In the open-field test, the NMDA and 8-OH-DPAT microinjections into the MRN caused higher horizontal locomotor activity than control rats without changing the number of rearings. These results clearly show that 5-HT mechanisms of the MRN are involved in the fear conditioning (contextual or light as conditioned stimuli). Distinct neural substrates seem to subserve conditioning fear with acoustic stimuli.