

Meeting abstract

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Differential pattern of co-expression between the substance P receptor NK₁ and calcium-binding proteins in the lateral and basolateral amygdaloid nuclei

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Increasing evidence suggests that substance P (SP) and its preferred receptor, namely the neurokinin 1 receptor (NK₁-R), play an important role in the modulation of stress-related, affective and/or anxious behaviours. Both SP and NK₁-R are expressed in brain regions critically involved in stress, fear and affective responses such as the amygdala, hippocampus and frontal cortex. In this study we aimed at identifying the types of NK₁-R-immunoreactive neurones in the basolateral complex of the amygdala according to their content in calcium-binding proteins by dual or triple labelling immunofluorescence. The basolateral amygdaloid complex consists of the lateral (LA) and basolateral (BL) nuclei, which are believed to be cytoarchitectonically and cytochemically similar. Our study reveals that in adult male Sprague-Dawley rats, 38.7 ± 6.7% of NK₁-R immunopositive LA neurones (124/331) co-express parvalbumin, representing 15.2 ± 3.4% (124/820) of parvalbumin-immunopositive neurones. Conversely, in the BL no coexistence between NK₁-R (293 neurones counted) and parvalbumin (2,385 neurones counted) expressing neurones was detected. In addition, we found that 32.4 ± 3.8% of NK₁-R-immunopositive LA interneurones (33/104) co-express calbindin-D28k, that is 6.0 ± 1.7% (33/626) of the total number of calbindin-D28k-immunoreactive neurones. On the other hand, in the BL a large number (72.3 ± 6.9%) of NK₁-R-immunopositive neurones (109/149) were found to co-express calbindin-D28k, representing 6.8 ± 1.3% of all calbindin-D28k-labelled neurones. We also found a lack of coexist-

ence between NK₁ and CR in both lateral and basolateral amygdala. These results suggest that interneurones in the LA and BL amygdala differentially express molecules involved in cell signalling and indicate a distinct organization in local interneurones. The BL resembled the hippocampal CA1 region, in which NK₁-R-expressing neurones do not coexist with parvalbumin.