

IMMUNOHISTOCHEMICAL C-FOS EXPRESSION AND AUTORADIOGRAPHY TO STUDY GALANIN/NEUROPEPTIDE Y Y1 RECEPTOR-RECEPTOR INTERACTION IN THE AMYGDALA

M.Narváez¹, C.Millón¹, A.Flores¹, L.Santín², C.Parrado¹, A.Puigcerver², D.Borroto-Escuela³, K.Fuxe³, Z. Díaz-Cabiale¹, J. A. Narváez¹

¹. Faculty of Medicine, University of Málaga, Málaga

². Faculty of Psychology, University of Málaga, Málaga

³. Department of Neuroscience, Karolinska Institute, Stockholm

We have shown Galanin(GAL)/Neuropeptide Y Y1 receptor(Y1) interactions in the nucleus tractus solitarius and the arcuate nucleus. Since both peptides play an important role in mood disorders, the aim of this work was to study GAL/Y1 interactions in the amygdala(AMY), key nucleus for fear, mood, and motivation. We have combined the analysis of the expression of c-Fos immunoreactivity(c-Fos IR) with an autoradiographic study in the AMY. Groups of anaesthetized rats (n=4) received intracerebroventricular injections(icv) of GAL(3nmol) and the Y1 agonist Leu³¹-Pro³⁴NPY(3nmol) alone or in combination, and were sacrificed 90 minutes after the injections. Immunohistochemical detection of c-Fos protein(1:5000) in AMY sections and stereological analysis were performed in: Basal(BA), lateral(LA), Central [lateral capsular subdivision(CeC), lateral intermediate subdivision(CeI), medial subdivision(CeM)] and the medial paracapsular intercalated(ITC) subnuclei of the AMY. For Autoradiography, rats (n=6) were sacrificed 15 minutes after icv injections of GAL(3nmol) and AMY sections were incubated with Y1 agonist [125I]-Leu31-Pro34-PPY (25 pM). Autoradiograms were analyzed using the NIH image analysis system. Student's unpaired t-test and ANOVA followed by Newman-Keuls were used, respectively. We observed within the AMY that GAL increased c-Fos IR in ITC and CeC; the Y1 agonist induced both, an increase of c-Fos IR in BA and CeC and a decrease of c-Fos IR in LA and ITC. The coadministration of both peptides induced a specific effect in the ITC, significantly decreasing the c-Fos expression (P<0,05) induced by GAL or the Y1 agonist alone. Moreover, we observed that GAL significantly increased (p<0,05) the Y1 receptor agonist binding [125I]Leu31Pro34-PYY in the AMY. These results demonstrate an interaction between GAL and Y1 at the cellular and receptor level in the AMY and suggest that endogenous GAL and NPY system might interact to regulate emotional behaviours. Study supported by Spanish CVI6476 and TV3-Marató 090130/31/32.

1^a: Neurociencia cognitiva y conductual

2^a: Neurociencia de sistemas