

COEXPRESSION OF GALANIN AND NESTIN IN HUMAN CAROTID BODY DIFFERENTIATING THE NEURONAL-LIKE CELL - THE HYPOXIA SENSOR

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Galanin is a biologically active neuropeptide that modulates a wide array of homeostatic and pathological processes; regulates differentiating neural stem cells participating in the plasticity of the nervous system. Recently, galanin was found expressed in the neuronal-like cells of the human carotid body. It was also found that the expression of galanin decreases with age, and dramatically so in the young drug-addicted subjects. Thus, the evidence suggests the involvement of galanin in neuroregeneration of the olfactory sensory neurons and a role in differentiation of neuronal-like cells. We now expanded on those studies by investigating the co-expression of galanin with nestin, a marker of differentiating neuronal-like cells, and, alternatively, with *glial fibrillary acidic protein* (GFAP) - a marker of supporting cells. We found a co-expression of galanin with nestin in serial sections, while not with GFAP. Densitometric analysis showed insignificant differences between the expression of galanin and nestin (ANOVA; $p > 0.05$), while a significant difference with GFAP ($p < 0.05$). In conclusion, the results support the idea that galanin is involved in neuronal-like cell differentiation. That finding, paired with the reduction of galanin expression in the aged and drug-addicted people, suggests it is a sign of losing sensorial capabilities by the aging carotid body, which is confirmed by the increased hypoxia inducible factor-1 α expression. As a consequence, the transmission of chemoreceptive signals could vitally reduced, resulting in cardio-respiratory impairment. We suggest a role for galanin in differentiation of the carotid body sensing cells.