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ABSTRACTS
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Abstracts are listed alphabetically according to the surname
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100-600 ms post-stimulus time interval. As expected, we found a car vs. bird category effect over the occipital regions around 140 milliseconds in both tasks. Furthermore, the type of task did not influence the category-related modulation of the visual N1 component. In spite of this, while in the categorization task the car vs. bird amplitude difference was present over the parieto-occipital regions almost for 600 ms, in the target-detection task it disappeared around 300 ms. Regarding frontal regions, the category effect appeared around 180 ms in both tasks, and was different in the two tasks only after 300 ms. These results suggest that active categorization is not only characterized by the modulation of distinct event-related components, but by permanent changes in neural activity both over parieto-occipital and frontal regions.

Comparative examination of developing teeth and facial bones in wild type and PACAP-deficient mice

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Tooth development shows similarities with the development of the nervous system, because teeth arise from the oral ectoderm and mesenchyme derived from the neural crest. PACAP plays a role in the development of the nervous system, and PACAP-immunoreactive fibers are found in the tooth pulp, but there is no data about the exact effect of endogenous PACAP on tooth development. Therefore, the aim of the present study was to compare the tooth development in 7-day-old wild type and PACAP deficient mice. On native histological sections, we measured the thickness of the forming dentin and enamel layers on first, second upper and lower molar teeth and the incisors. We examined the structural differences between the teeth with Thermo Scientific DXR Raman microscope. We also investigated the structure of the facial bones from adult wild type and PACAP-deficient mice with IMPACT 400 spectrometer. Our results demonstrated that in PACAP-deficient mice the developing dentin layer is significantly thinner compared to wild-type mice. Significant differences were found in Raman spectra of enamel and FT-IR spectra of facial bones of wild type and PACAP-deficient mice. Raman spectra showed significantly higher intensity of PO43- in enamel and FT-IR spectra showed significantly lower intensity of PO43- in facial bones of PACAP-deficient mice compared to wild-type animals. These observations suggest that PACAP plays a role in tooth development in the dentin formation as well as the mineralization of enamel and alveolar bones.

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Predominant expression of insulin receptors in visceral primary afferent neurons and their co-localization with the capsaicin receptor

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The neurotrophic effects of insulin and related growth factors are well documented in the central nervous system. Recent findings indicated functional interaction between the insulin receptor (InsR) and the transient receptor potential vanilloid type 1 receptor (TRPV1) co-expressed in a subset of nociceptive primary sensory neurons. To disclose the target specificity of InsR+ capsaicin-sensitive afferents, retrograde labelling of dorsal root ganglion (DRG) neurons and immunohistochemistry were employed. Retrograde labelling, using diamidino yellow, demonstrated that 47±6%, 16±4% and 19±3% of DRG neurons innervating the urinary bladder, skin and muscle, respectively, express the InsR. To demonstrate the co-localization of the InsR with TRPV1 in visceral sensory neurons serving the urinary bladder and the pancreas, biotinylated wheat germ agglutinin (bWGA) or FITC-labelled cholera toxin B subunit (CTB-FITC) was injected into these organs. Retrograde tracing with bWGA, as compared with CTB-FITC, identified significantly higher proportions of TRPV1+ DRG neurons. Co-localizations of TRPV1 with the InsR were observed in 27±5% and 15±3% of neurons labelled retrogradely from the urinary bladder with bWGA and CTB-FITC, respectively. Of bWGA-labelled pancreatic DRG neurons, the proportion of TRPV1/InsR double labelled neurons amounted to 25±4% and 34±5% in the Th9-L1 DRGs and the nodose ganglia, respectively. The proportions of DRG neurons of urinary bladder and pancreatic origin showing co-localization of the InsR with calcitonin gene-related peptide amounted to 23% and 16%, respectively. The present study disclosed a more abundant co-expression of the InsRs with the TRPV1 receptor in visceral primary sensory neurons as compared to somatic ones and suggests that InsR-mediated potentiation of the TRPV1 activation, as observed *in vitro*, may play a distinct role in visceral nociceptive and inflammatory mechanisms.

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Estrogens regulate inflammatory genes via estrogen receptor α and β in the frontal cortex of middle-aged female rats

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In the CNS, 17 β -estradiol (E2) suppresses inflammatory processes. The effects of E2 are mediated mainly by estrogen receptor α (ER α) and β (ER β) which are ligand-dependent transcription factors. However, the role of transcriptional regulation in the anti-inflammatory effects of E2 has not been extensively studied yet in the brain. To identify estrogen-regulated inflammatory genes, we treated middle-aged, ovariectomized rats with E2, ER α agonist 16 α -lactone-estradiol, ER β agonist diarylpropionitrile, or vehicle by osmotic minipump delivery for 29 days. Then we compared the transcriptomes of the frontal cortex of estrogen-deprived versus ER agonist-treated animals by using Affymetrix expression arrays and real-time PCR. Microarray analysis revealed 21 immunity genes among the top 100 ER α agonist-regulated transcripts (87 genes). Pathway analysis also highlighted the potent immunomodulatory effects of the ER α agonist. Next, we