Axiogenic-like effects and reduced stereological counting of immunolabelled 5-hydroxytryptamine receptors in rat nucleus accumbens by antisense oligonucleotides

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The physiological role of 5-hydroxytryptamine receptors in the central nervous system has not yet been elucidated. The high affinity of various psychotrophic drugs for 5-hydroxytryptamine receptors has led to the suggestion that this receptor type may be a novel target in neuropsychiatry. We have found that continuous intracerebroventricular administration of a 5-hydroxytryptamine receptor antisense oligonucleotide, but not of a missense oligonucleotide, produced an anxiogenic-like response in rats using two different models of anxiety, the social interaction test and the elevated plus-maze. Neither oligonucleotide treatment modified locomotor activity, rectal temperature or food intake, suggesting a low or null neurotoxicity. The effectiveness of the treatment with the designed antisense oligonucleotide to block the synthesis of the protein encoded by the target mRNA was assessed by immunolabelling 5-hydroxytryptamine receptors in the nucleus accumbens, where this receptor is highly expressed, using previously characterized specific antibodies. The density of the immunostaining was quantified by means of an unbiased three-dimensional stereologic procedure, which revealed a significant reduction (-25%) in the number of immunolabelled neuronal elements. These results suggest that, in addition to other 5-hydroxytryptamine receptor subtypes, 5-hydroxytryptamine6 receptors in the nucleus accumbens may participate in anxiety-related neurobiological mechanisms.

Key words: anxiety, 5-ht6 receptor, antisense oligonucleotide, nucleus accumbens, stereology.

Identification of a 36kDa olive-pollen allergen by in vitro and in vivo studies

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Background: Ole e 1 has been considered the major allergen of olive (Olea europaea) pollen. Some other relevant allergens (Ole e 2, 3, 4, and 6) have been recently described. This work aimed to study the IgE-binding frequency of a 36-kDa protein from O. europaea pollen in a large population of olive-allergic patients, its allergenic reactivity in vivo, and its presence in olive pollens of different origin, as well as in other relevant allergenic pollens.

Methods: Identification of IgE-binding components from O. europaea pollen extracts was elucidated by inhibition of SDS-PAGE immunoblotting using recombinant profilin (Ole e 2) and Ole e 1 molecules. The IgE-binding frequency of the 36-kDa protein was estimated by Western blot in a sample of 120 sera from olive-allergic patients. The cutaneous test with the 36-kDa protein was performed by intradermoreaction in allergic patients and control subjects.

Results: Exactly 83% of the sera from O. europaea-allergic patients recognized a protein with an apparent molecular weight of 36 kDa, under reducing conditions. It was detected by sera from monosensitized and polysensitized patients, showing a higher IgE frequency than the major allergen Ole e 1 (59%) and the minor profilin (Ole e 2) allergen (27%). Similar reactivity rates (79%) was found by intradermal test. Extracts from olive pollens collected in California presented a much higher amount (around 16-fold on average) of the 36-kDa protein than those from pollens of Spanish origin. The presence of similar allergens was detected only in closely related species (Syringa, Fraxinus, Ligustrum), and not in other common allergenic pollens.

Conclusions: The 36-kDa protein constitutes a major allergen for olive-sensitized patients, but it is not equally represented in O. europaea pollens of different origins.

Key words: immunoblot inhibition; Olea europaea allergens; Ole e 1; Ole e 2; Ole e 4; olive-pollen allergy; profilin; SDS-PAGE immunoblotting.