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[TOP](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

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Responses to Neonicotinoids of Chicken $\alpha 7$ Nicotinic Acetylcholine Receptors: Effects of Mutations of Isoleucine 191 in Loop F to Aromatic Residues

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Abstract:

The effects on the responses to neonicotinoids and related nicotinic agonists of three site-directed mutations (I191W, I191F and I191Y) in loop F of the acetylcholine-binding site were studied using the chicken $\alpha 7$ nicotinic acetylcholine receptor (nAChR) expressed in *Xenopus laevis* oocytes. Voltage-clamp electrophysiology was employed to show that, whereas the I191F mutation scarcely affected the concentration-response curves for neonicotinoids, the I191W mutation increased the maximum amplitude of responses to these ligands. By contrast, the I191Y mutation reduced the maximum amplitude of responses of the $\alpha 7$ nAChR to the insecticides. © Pesticide Science Society of Japan

Keywords:

imidacloprid, neonicotinoid, desnitro-imidacloprid, nicotinic acetylcholine receptor, chicken $\alpha 7$ subunit, loop F



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