

Okaramines produced by *Penicillium simplicissimum* AK-40 activate l-glutamate-gated chloride channels (GluCl_s) and thus paralyze insects. However, the okaramine binding site on insect GluCl_s is poorly understood. Sequence alignment shows that the equivalent of residue Leucine319 of the okaramine B sensitive *Bombyx mori* (*B. mori*) GluCl is a phenylalanine in the okaramine B insensitive *B. mori* γ -aminobutyric acid-gated chloride channel of the same species. This residue is located in the third transmembrane (TM3) region, a location which in a nematode GluCl is close to the ivermectin binding site. The *B. mori* GluCl containing the L319F mutation retained its sensitivity to l-glutamate, but responses to ivermectin were reduced and those to okaramine B were completely blocked.

An L319F mutation in TM3 reduces okaramine B sensitivity more profoundly than ivermectin sensitivity of *Bombyx mori* l-glutamate-gated chloride channel. The Graphical image was illustrated using PyMOL software.

