Analgesic effect of GT-0198, a structurally novel glycine transporter 2 inhibitor, on a mouse model of neuropathic pain

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This study was conducted to show the pharmacological characteristic features of GT-0198. GT-0198 inhibited the function of glycine transporter 2 (GlyT-2) in the human GlyT-2-expressed HEK293 cells and did not bind various major transporters and receptors of neurotransmitter in the competitive manner. Thus, GT-0198 was considered as a comparatively selective GlyT-2 inhibitor. Intravenous, oral and intrathecal injection of GT-0198 decreased the pain-related response on the model of neuropathic pain with the partial sciatic nerve ligation. This result suggests that GT-0198 has an analgesic effect. The analgesic effect of GT-0198 was abolished by the intrathecal injection of strychnine, a glycine receptor antagonist. Therefore, GT-0198 is considered to exhibit the analgesic effect via the activation of glycine receptor by glycine following the presynaptic GlyT-2 inhibition in the spinal cord. In summary, GT-0198 is a novel GlyT-2 inhibitor with in vivo efficacy in behavioral models of neuropathic pain.