

ABSTRACT

Potency of Tramadol as a Local Anesthetic In Frog (*Rana speciosa*) and Guinea Pig (*Cavia porcellus*)

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Although local anesthetics are used routinely for local and regional anesthesia, these compounds may be toxic. Problem with systemic toxicity (ranging from vertigo to respiratory arrest) have long been appreciated. More recently reports of neurological injury suggest that local anesthetics can cause nerve injury. There are some studies that are observed for several alternative local anesthetics as well as adjuvant drugs that may enhance the quality of local anesthetics.

The objectives of the study are, to prove that the local anesthetic effect of Tramadol Hcl topically in frog's sciatic plexus nerve by measuring foot withdrawal reflex response time . Second, to prove the local anesthetics effect of Tramadol Hcl injected intradermally in guinea pig's dermatome is positive due to negative contraction of local muscle.

Twenty four frogs are divided into four groups each group were treated with control (Normal Saline), Tramadol 1,25 %, 2,5 % and 5 % topically at its sciatic plexus. Treatments were applied three times at second, fourth and sixth minute in frogs. Tramadol was intradermally in twenty four Guinea pigs divided into four groups. Treatments were applied three times also at first, sixth and eleventh minute in Guinea pigs. Response time for foot withdrawal reflex in frogs and positive reflex responses in Guinea pigs were measured.

The result of the sixth minute study showed significant difference in the means ($p < 0,05$) of frog response time Tramadol 2,5 % ($9,333 \pm 1,633$) seconds and 5 % ($10,00 \pm 0,0$) seconds, comparing with control ($1,097 \pm 0,468$) seconds. In Guinea pigs, the significant difference of the means found in control ($0,167 \pm 0,408$); Tramadol 1,25 % ($2,333 \pm 0,516$); Tramadol 2,5 % ($4,667 \pm 0,516$) and Tramadol 5 % ($5,000 \pm 0,000$) on the eleventh minute study.

The conclusion of this study is that Tramadol 2,5 % and 5 % are able to block withdrawal reflex response time on the sixth minute experiment in frogs. In guinea pigs, Tramadol 1,25 %, 2,5 % and 5 % were able to reduce the sum of responses due to pain on the eleventh minute experiment.

Keywords : Tramadol, local anesthetic, guinea pig, frog, peripheral nerve, reflex, response.

