The results of this study show a remarkable similarity between the receptor complex with a positive cooperative effect on the relationship is linear.

In vitro thiopental inhibited \[H]TBOB binding with an IC\(_50\) of 28 \(\mu\)M and a slope factor of 1.65.

The aim of this study was to gain insight into the molecular mechanism underlying the in vivo effects of thiopental. We compared the dose-response curve of thiopental on the withdrawal reflex to transcutaneous stimulation in rats [1] to the dose-response curve of thiopental on the binding of \([H]\)TBOB to the GABA\(_A\) receptor complex in rat brain homogenates [2]. The sigmoid \(E_{\text{max}}\) model was fitted to both datasets.

In vivo thiopental suppressed the withdrawal responses with an \(E_{\text{max}}\) of 4.5 mg/kg corresponding to 9.2 \(\mu\)moles/kg brain, and a slope factor of 1.60.

In vitro thiopental inhibited \([H]\)TBOB binding with an IC\(_50\) of 28 \(\mu\)M and a slope factor of 1.65.

The results of this study show a remarkable similarity between the in vivo curves and the in vitro curves, confirming both the effective concentrations and the shape of the curves. Based on this similarity we hypothesize that:

1. an interaction of thiopental with the GABA\(_A\) receptor complex can account for the inhibition of the withdrawal effect; this relationship is linear.
2. two thiopental molecules bind to the GABA\(_A\) receptor complex with a positive cooperative effect on the (negative) modulation of the \([H]\)TBOB binding site. This can account for the high slope factors found.