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Abstracttitel: Evaluation of Hemodynamics of Landiolol Hydrochloride during General Anesthesia by Logistic Function

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**Purpose:** Landiolol hydrochloride is an ultra-short-acting beta<sub>1</sub>-adrenergic receptor blocking agent that was approved in Japan in 2002 and has been used for patients with tachycardia during general anesthesia and post-operative period. In the present study, we investigated the effects of different doses of landiolol on the hemodynamics by logistic function, which represents a sigmoid curve.

**Methods:** Following a persistence of tachycardia for more than 1 min, landiolol was infused at 0.03125, 0.0625, and 0.125 mg/kg/min for 1 min followed by 0.01, 0.02, and 0.04 mg/kg/min for 10 min in groups L, M, and H, respectively. Heart rate (HR), systolic (sBP), and diastolic blood pressure (dBP) were recorded each minute during this procedure. The respective changes were evaluated using logistic analysis with the equation;  $Y(t) = p + (q - p) / [1 + \exp\{(4m/(q - p))(k - t)\}]$ , where parameters  $p$ ,  $q$ ,  $m$ , and  $k$  indicate the upper asymptote, lower asymptote, maximum slope, and time at the maximum slope.

**Results:** Parameters  $q$  and  $k$  for HR in group H were smaller than those in group L, whereas the parameters for sBP and dBP were unchanged among the three groups.

**Conclusion:** The hemodynamic response to landiolol is reliably modeled by the logistic function, especially in terms of HR. Landiolol causes a rapid and dose-dependent decrease in HR, whereas landiolol-induced changes in sBP and dBP are independent of dose. The logistic model may be useful for studying hemodynamic responses to landiolol based on differences in subjects such as age and sex.

**Reference:** Mizuno J, et al. Eur J Clin Pharmacol 63: 243-252, 2007