

## Comparison of Remifentanil EC50 for Facilitating I-Gel and Laryngeal Mask Airway Insertion with Propofol Anesthesia

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**Abstract :** Background: Each supraglottic airway requires different anesthetic depth because it has a specific structure and different compressive force in the oropharyngeal cavity. We designed the study to investigate remifentanil effect-site concentration (Ce) in 50% of patients (EC50) for successful insertion of i-gel, and to compare it with that for laryngeal mask airway (LMA) insertion during propofol target-controlled infusion (TCI). Methods: Forty-one female patients were randomized to the i-gel group (n=20) or the LMA group (n=21). Anesthesia induction was performed using propofol Ce of 5 µg/ml and the predetermined remifentanil Ce, and i-gel or LMA insertion was attempted 5 min later. The remifentanil Ce was estimated by modified Dixon's up-and-down method (initial concentration: 3.0 ng/ml, step size: 0.5 ng/ml). The patient's response to device insertion was classified as either 'success (no movement)' or 'failure (movement)'. Results: Using the Dixon's up and down method, EC50 of remifentanil Ce for i-gel ( $1.58 \pm 0.41$  ng/ml) was significantly lower than that for LMA ( $2.25 \pm 0.55$  ng/ml) ( $p=0.038$ ). Using isotonic regression, EC50 (83% CI) of remifentanil in the i-gel group [1.50 (1.37-1.80) ng/ml] was statistically lower than that in the LMA group [2.00 (1.82-2.34) ng/ml]. EC95 (95% CI) of remifentanil in the i-gel group [2.38 (1.48-2.50) ng/ml] was statistically lower than that in the LMA group [3.35 (2.58-3.48) ng/ml]. Conclusion: We found that EC50 of remifentanil Ce for i-gel insertion (1.58 ng/ml) was significantly lower than that for LMA insertion (2.25 ng/ml), in female patients during propofol TCI without neuromuscular blockade.

**Keywords :** i-gel, laryngeal mask airway, propofol, remifentanil

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