

# The Effect of Preoperative Oral Carbohydrate Loading on Postoperative Insulin Resistance and Recovery Following Orthognathic Surgery: A Randomized Placebo-controlled Trial in Healthy Volunteers

Watit Dechpong<sup>1</sup>, Warit Powcharoen<sup>2</sup>, Kathawut Tachasuttirut<sup>2</sup>, Rawisara Sansiri<sup>3</sup>, Phuriphong Chanthima<sup>4</sup>, Pimpisid Koonyosying<sup>5</sup>

<sup>1</sup>Graduate Student, Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Chiang Mai University, Thailand

<sup>2</sup>Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Chiang Mai University, Thailand

<sup>3</sup>School of Dentistry, Mae Fah Luang University, Thailand

<sup>4</sup>Department of Anesthesiology, Faculty of Medicine, Chiang Mai University, Thailand

<sup>5</sup>Department of Biochemistry, Faculty of Medicine, Chiang Mai University, Thailand

Received: March 6, 2022 • Revised: April 18, 2022 • Accepted: May 17, 2022

Corresponding Author: **Assistant Professor Warit Powcharoen**, Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Chiang Mai University, Chiang Mai 50200, Thailand. (E-mail: [warit.p@cmu.ac.th](mailto:warit.p@cmu.ac.th))

## Abstract

**Objectives:** This study aimed to investigate the effect of preoperative oral carbohydrate loading on postoperative insulin resistance, inflammation, and recovery following orthognathic surgery.

**Methods:** Twenty healthy patients were evenly randomized to receive 12.5% oral carbohydrate drink (CHO group) which is 50 g of glucose (400 ml) or placebo drink three hours before surgery. Insulin resistance, determined by homeostatic model assessment (HOMA-IR), and interleukin-6 (IL-6) levels were measured before and after orthognathic surgery. Length of stay, time to readiness for discharge (TRD) from postanesthetic care unit (PACU), postoperative complications, and quality of postoperative recovery were also documented. Regression analysis was used to explore independent effect of preoperative carbohydrate loading.

**Results:** Postoperative HOMA-IR and IL-6 levels showed no statistically significant difference between groups. TRD from PACU was significantly shorter in CHO group ( $p=0.01$ ). No significant differences of length of stay, postoperative complications, and quality of recovery were observed.

**Conclusions:** Preoperative carbohydrate loading did not improve postoperative insulin resistance and inflammation following orthognathic surgery. However, this intervention significantly enhanced recovery in postanesthetic care unit.

**Keywords:** carbohydrate loading, inflammation, insulin resistance, orthognathic surgery, post-surgery recovery time