



**PROCEEDING**

**2<sup>ND</sup> INTERNATIONAL CONFERENCE ON TRANSLATIONAL MEDICINE  
AND HEALTH SCIENCES (ICTMHS)**  
*in conjunction with*  
**4<sup>TH</sup> JAVA INTERNATIONAL  
NURSING CONFERENCE (JINC)**

**Semarang, Indonesia**  
**September, 14<sup>th</sup>-15<sup>th</sup>, 2018**



**"Creating a Better Future of Health Care:  
Partnerships in Research, Education, and Clinical Care"**



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## Carbohydrate Restriction Alleviate Inflammatory Responses

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### ABSTRACT

**Introduction:** Diet pattern commonly used comprised of 60-70% carbohydrate/CH: 20% protein/P: 10-20% fat/F. Overconsumption of carbohydrate leads to oxidative stress, inflammation, obesity, and various degenerative diseases. While in some population, adopt moderate calorie restriction, 30% reduction from all components, leads to fragility. Carbohydrate restriction diet, consist of 40%CH: 30%P: 30%F proposed as the best diet against inflammation, a key mechanism in degenerative diseases. This study investigated the superiority of carbohydrate restriction in inflammation markers.

**Methods:** Post test only control group design was applied to this study. Using 20 Sprague Dawley rats, aged 12 weeks, divided into 4 groups: CH70 (70%C:20%P,10%F), CH60 (60%C:20%P,20%F), CH40 (40%C:30%P,30%F), and CRall (30% reduction from CH70). Diet was given ad libitum for 30 days. Blood serum was tested for IL-6, CRP, and TNF- $\alpha$ . Data were analysed using ANOVA for each variable, with level of significance of  $p < 0.05$ .

**Results:** Carbohydrate restriction showed the best level of IL-6, CRP and TNF- $\alpha$  among all groups. The lowest level of CRP found on CH40 (1.038mg/dL), followed by CRall (1.19mg/dL), CH60 (1.482mg/dL), and the highest level on CH70 group (1.74mg/dL). IL-6 level was also found the lowest point at CH40 (378.51 mg/dL), followed by CH70 (391.02 mg/dL), CRall (420.87 mg/dL), the highest point at CH60 (490.95 mg/dL). TNF- $\alpha$  was found the lowest level on CRall (2.522 pg/mL), followed by CH40 (3pg/mL), CH60 (3.498pg/mL), and the highest level on CH70 (4.09 pg/mL).

**Conclusion:** Carbohydrate restriction, using only 40% carbohydrate alleviated inflammatory process in rats. Further studies in human are required to investigate the adherence to this diet.

**Keywords:** macronutrients; diet; carbohydrate; inflammation; calorie restriction

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