



## P-10

### EFFECTS OF MILK INTAKE + 1-MONTH INTERVAL WALKING TRAINING ON *NFKB2* GENE METHYLATION IN OLDER MEN

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We have previously reported that the methylation of *NFKB2* gene, one of the master genes of pro-inflammatory response, was enhanced by milk product intake during 5-mo interval walking training (IWT) in middle-aged and older women.

In the present study, we examined whether the similar effects were obtained when a kind of protein rich milk was ingested during IWT for a month, a shorter period than in the previous study, and whether IWT was an indispensable condition to obtain the methylation of *NFKB2* by the milk intake. First, we divided older men (~76 yr) who had had no exercise habits into two groups; CNT group (n = 11) ingesting 200 ml carbohydrate-electrolyte solution (105.2 kcal; 0.0 g protein and 27.4 g carbohydrate); and MLK group (n = 12) ingesting 200 ml milk (114 kcal; 10.5 g protein and 9.3 g carbohydrate) with no IWT for a month [1<sup>st</sup> trial: February to March]. They ingested the assigned beverage at the breakfast. After a one-month washout period, the subjects in each group exchanged the beverages and underwent the same trial for a month [2<sup>nd</sup> trial: April to June] by the crossover design. Then, after a one-month washout period, the subjects in each group repeated additional two trials but with IWT for a month each by the crossover design [3<sup>rd</sup> trial: August to October, 4<sup>th</sup> trial: November to December, respectively]. They ingested the assigned beverage within 30 min after daily IWT. We measured *NFKB2* gene methylation by pyrosequencing before and after each trial in each group.

We found that the methylation was enhanced in the MLK than in the CNT group (P<0.05) only in the 4<sup>th</sup> trial and that the methylation level showed seasonal variation, marking the highest in February and the lowest in October, with the range of  $\pm\sim 4.0\%$  from the average value throughout the experiment.

Thus, IWT+milk intake might enhance the *NFKB2* gene methylation and the effects might be affected by seasonal variation.

**Keywords:** milk intake, anti-inflammatory response, methylation, NF- $\kappa$ B2, seasonal variation