165

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Non-alcoholic beer: only the inactive descendant of alcohol-containing beer?

Growing evidence of physiological effects of non-alcoholic beer by ingredients other than alcohol

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1. Purpose:

Strenuous exercise significantly increases the incidence of upper respiratory tract illness (URTI) caused by transient immune dysfunction. Furthermore, platelets are playing a crucial role in acute cardiovascular events, e.g. Atherosclerosis. Naturally occurring polyphenolic compounds present in food such as nonalcoholic beer (NAB) have strong antioxidant, antipathogenic, and anti-inflammatory properties. The objective of this study was to determine whether ingestion of the NAB polyphenols of ERDINGER non-alcoholic for 3 wk before and 2 wk after a marathon would attenuate postrace inflammation and decrease URTI incidence. Additionally, we investigated if physical stress activates platelets and whether this activation can be inhibited by ERDINGER non-alcoholic.

2. Materials and methods:

Healthy male runners (N = 277, age = 42 T 9 yr) were randomly assigned to 1–1.5 L per day of NAB or placebo (PL) beverage (double-blind design) for 3 wk before and 2 wk after the Munich Marathon. Blood samples were collected 4 and 1 wk before the race and immediately and 24 and 72 h after the race and analyzed for inflammation measures (interleukin-6 and total blood leukocyte counts). URTI rates, assessed by the Wisconsin Upper Respiratory Symptom Survey, were compared between groups during the 2-wk period after the race. Besides analysis of platelet counts and impedance-aggregometric-measurement of platelet activity, soluble P-selectin and Endothelin-A measurements were performed in 103 precipitants.

3. Results:

Change in interleukin-6 was significantly reduced in NAB compared with PL immediately after the race (median (interquartile range) = 23.9 (15.9–38.7) vs 31.6 (18.5–53.3) ngIlj1, P = 0.03). Total blood leukocyte counts were also reduced in NAB versus PL by approximately 20% immediately and 24 h after the race (P = 0.02). Incidence of URTI was 3.25-fold lower (95% confidence interval = 1.38–7.66) (P = 0.007) in NAB compared with PL during the 2-wk postmarathon period.

In the control group, runners showed a 2.2-fold increased platelet aggregation directly after completing a marathon and within the following three days when compared with baseline values (p<0.01). In accordance, significant increases in sP-selectin (57.52ng/ml vs. 94.86ng/ml;p<0.01) were detectable. In contrast, for the group consuming ERDINGER non-alcoholic (upper quartile of study beverage intake = more than 1.28 l per day) we did not find any increase of platelet aggregation.

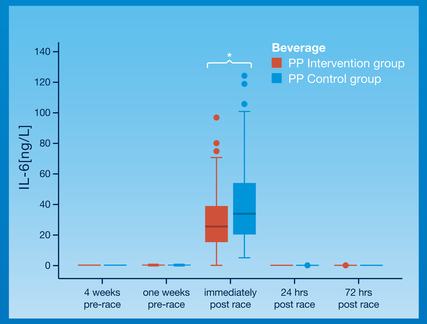

Figure 1 – IL-6 values for the intervention and control groups at all visits. *p = 0.03.

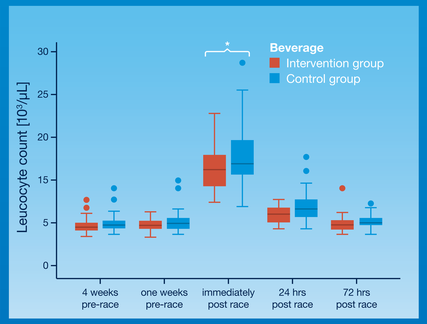

Figure 2 – Leukocyte counts for the intervention and control groups at all visits. GEE analysis difference in leukocyte levels at V3 (immediately after the race) and V4 (24 h after the race), overall comparison: mean difference ± SE = 1.2 x 109 ± 0.65 x 109 L-1, p = 0.02.

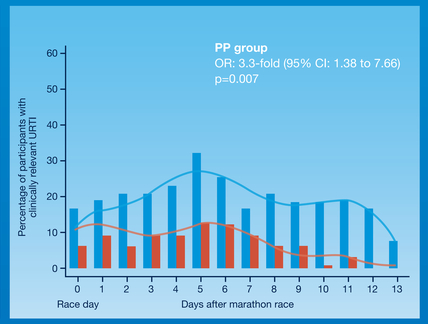

Figure 3 – Incidence of clinically relevant URTI (upper respiratory tract illness) after the marathon race in the intervention group (blue) and control group (red).

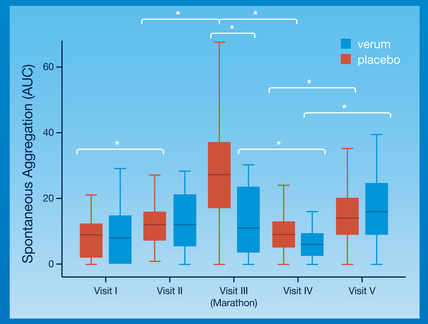

Figure 4 – Spontaneous thrombocyte aggregation Upper quartile-analysis. Analysis of the precipitants who consumed more than 1.28 L of the verum-fluid (ERDINGER non-alcoholic) per day. Compared to placebo there was no increase in spontaneous thrombocyte aggregation after the marathon. *p<0.05; **p<0.01.

4. Conclusion:

Consumption of 1–1.5 L per day of ERDINGER non-alcoholic for 3 wk before and 2 wk after marathon competition reduces postrace inflammation and URTI incidence. Furthermore, physical stress causes a significant increase in platelet activity. Our results demonstrate that the polyphenols of ERDINGER non-alcoholic are capable of preventing platelet activation. These findings might indicate a diminished cardiovascular stress-reaction and postrace inflammations in athletes following pre-exposition to NABs.

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References: Scherr et al. (2011) Nonalcoholic Beer Reduces Inflammation and Incidence of Respiratory Tract Illness. *Clinical Sciences* / **Nickel et al.** (2015) Influence of High Polyphenol Beverage on Stress-induced Platelet Activation. *J Nutr Health Aging*