Non-alcoholic Beer Reduces Inflammation And The Incidence Of Upper Respiratory Tract Infections After A Marathon

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Purpose

Polyphenols have strong anti-inflammatory properties.

Methods

277 healthy male participants of the Munich Marathon 2009 were in a double-blinded design randomly assigned to 1.15 L d−1 NAB (serum) or placebo (PL) for three weeks prior to and two weeks after the marathon.

Results

Baseline characteristics are given in Tab. 1. Changes in IL-6 and leukocyte count from pre- to post-race were significantly reduced in the NAB group compared to the PL group (IL-6: 23.9 (15.9 - 38.7) ng/ml vs. 31.6 (18.5 - 53.3) ng/ml, p < 0.001; leukocyte count: reduction of approx. 20%, p < 0.02, see Figure 1 & 2).

Conclusions

In conclusion, consumption of 1.15 L d−1 non-alcoholic beer with polyphenols for three weeks prior to a marathon would attenuate post-race inflammation and decrease URTI incidence.

Abstract

Strenuous exercise significantly increases the incidence of upper respiratory tract infections (URTIs) caused by transient immune dysfunction. Naturally occurring polyphenolic compounds present in food such as non-alcoholic beer (NAB) have strong anti-oxidant, anti-inflammatory, and anti-pathogenic properties.

PURPOSE To determine whether ingestion of non-alcoholic beer polyphenols for three weeks prior to the Munich Marathon would attenuate post-race inflammation and decrease URTI incidence.

METHODS Healthy male runners (N=277, age 42±9 y) were randomly assigned to 1.15 L d−1 NAB or placebo (PL) in a double-blinded design after three weeks before and two weeks after the Marathon. Participants were divided into 4- and 1-week pre-race, and immediately, 24-h, and 72-h post-race, and analyzed for inflammation markers (IL-6 and total blood leukocyte counts). URTI rates, assessed by the Wisconsin Upper Respiratory Symptom Survey (WURSS-21), were compared between groups during the whole period following the race.

RESULTS Change in IL-6 was significantly reduced in NAB compared to PL immediately post-race median (interquartile range): ng/ml vs. 31.6 (18.5-53.3), p < 0.001. Total blood leukocyte counts were also reduced in NAB versus PL by approximately 20% immediately and 24-h post-race (p < 0.02). Incidence of URTI was 3.25 fold lower (95% CI 1.38-7.68) (p < 0.001) in NAB compared to PL during the 2-week post-marathon period.

CONCLUSION Consumption of 1.15 L d−1 non-alcoholic beer for three weeks before and immediately after marathon completion reduces post-race inflammation and URTI incidence.

Purpose

In contrast to moderate physical activity, prolonged and intensive exercise has been linked in multiple animal and human studies to transient inflammation and immune dysfunction, and elevated incidence of upper respiratory tract illnesses (URTIs).

Consumption of polyphenols – which can be found in fruits, vegetables, wine and also non-alcoholic beer (NAB) – has been linked to a decreased incidence of chronic disease such as cancer and cardiovascular disease which has been attributed to their strong anti-oxidant, anti-inflammatory, and anti-pathogenic properties.

We hypothesized that ingestion of non-alcoholic beer polyphenols for three weeks prior to a marathon would attenuate post-race inflammation and decrease URTI incidence.

Figure 1. Interleukin 6 values for the intervention and control group at all visits. * indicating p < 0.03.

Figure 2. Leukocyte counts for the intervention and control group at all visits. GEE analysis: difference in leukocyte levels at V3 (pre-marathon; and V4: 24-h post-marathon) overall comparison: mean difference ± SE = 1.2 ± 0.55 10^3/L, p = 0.03.

Figure 3. Incidence of clinical relevant URTI in the FAS & CC population after the marathon race in the intervention group (black striped) and control group (grey)

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