

## INTISARI

### EFEKTIVITAS MINUMAN KOMBINASI MALTODEKSTRIN DAN VITAMIN C TERHADAP HITUNG JENIS LEUKOSIT PADA ATLET SEPAK BOLA MAHASISWA

Silvi Lailatul Mahfida<sup>1</sup>, B.J. Istiti Kandarina<sup>2</sup>, Arta Farmawati<sup>3</sup>

**Latar Belakang:** Latihan fisik memicu respon imun, stres oksidatif, dan kerusakan jaringan yang menyebabkan perubahan hitung jenis leukosit. Maltodekstrin menyediakan cadangan energi lebih tinggi dan membantu memperbaiki profil sistem imun. Vitamin C sebagai antioksidan melawan kerusakan jaringan. Penelitian ini bertujuan mengkaji efektivitas pemberian minuman kombinasi maltodekstrin dan vitamin C terhadap hitung jenis leukosit setelah latihan.

**Metode:** Jenis penelitian *quasi experimental* dengan rancangan *within subject design*. Subjek penelitian adalah 14 atlet sepak bola mahasiswa dari Universitas Negeri Yogyakarta dan memenuhi kriteria inklusi serta eksklusi. Pemilihan subjek dengan *purposive sampling*. Subjek mendapat minuman kombinasi 15% maltodekstrin dan 250 mg vitamin C, 300 mL. *Wash out* selama 6 hari. Kemudian subjek diberi minuman plasebo (air putih 300 mL). Minuman diberikan 30 menit sebelum dan 5 menit setelah latihan. Latihan berupa *yoyo intermitten test* dan lari bertahap hingga 80% HR<sub>maks</sub>. Sampel darah diambil segera dan 30 menit setelah latihan.

**Hasil Penelitian:** Pada pemberian minuman intervensi, sesaat hingga 30 menit setelah latihan, neutrofil naik ( $p=0,006$ ), limfosit turun ( $p=0,015$ ), monosit turun ( $p=0,000$ ), dan eosinofil turun ( $p=0,613$ ). Pada pemberian minuman plasebo, sesaat hingga 30 menit setelah latihan, neutrofil naik ( $p=0,359$ ), limfosit turun ( $p=0,257$ ), monosit turun ( $p=0,146$ ), dan eosinofil naik ( $p=0,549$ ). Neutrofil ( $p=0,003$ ) dan monosit ( $p=0,003$ ) berbeda signifikan antar kedua pemberian pada 30 menit setelah latihan. Pada pemberian minuman intervensi, 30 menit setelah latihan, limfosit dan monosit menurun signifikan ( $p<0,05$ ) dibandingkan plasebo.

**Kesimpulan:** Minuman kombinasi maltodekstrin dan vitamin C berefek pada penurunan limfosit dan monosit 30 menit setelah latihan.

**Kata Kunci:** maltodekstrin, vitamin C, setelah latihan, hitung jenis leukosit

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1. Mahasiswa Minat Gizi Kesehatan, S2 Ilmu Kesehatan Masyarakat, Fakultas Kedokteran, Universitas Gadjah Mada
  2. Bagian Ilmu Kesehatan Masyarakat, Fakultas Kedokteran, Universitas Gadjah Mada
  3. Bagian Biokimia, Fakultas Kedokteran, Universitas Gadjah Mada

## ABSTRACT

### EFFECTIVENESS OF MALTODEXTRIN AND VITAMIN C COMBINATION DRINK TO LEUKOCYTE DIFFERENTIAL COUNTS IN COLLEGIATE FOOTBALL ATHLETE

Silvi Lailatul Mahfida<sup>1</sup>, B.J. Istiti Kandarina<sup>2</sup>, Arta Farmawati<sup>3</sup>

**Backgrounds:** The immune system changing affects the fitness. Exercise induces the immune responses, oxidative stress and tissue damage that alters leukocyte counts. Maltodextrin supplies higher energy reserves, that can improve the immune system profiles. Vitamin C as an antioxidant against tissue damage. This study aims to assess the effectiveness of a maltodextrin and vitamin C combination drink on leukocyte differential count after exercise.

**Methods:** This study was quasi experimental with within subject design. Subjects were 14 collegiate football players of State University of Yogyakarta and fulfilled the inclusion and exclusion criteria. Subjects were selected with a purposive sampling. Subjects received a combination of 15% maltodextrin and 250 mg of vitamin C beverage, 300 mL. Subjects did wash out for 6 days, then received placebo beverage (300 mL plain water). Subjects drank 30 minutes before and 5 minutes after physical exercise. Exercise loads were yoyo intermittent test and run gradually until 80 HR<sub>maks</sub>. Blood samples were taken immediately and 30 minutes after exercise.

**Results:** In the administration of intervention beverage, immediately to 30 minutes after exercise, neutrophils increased ( $p=0,006$ ), lymphocytes decreased ( $p=0,015$ ), monocytes decreased ( $p=0,000$ ), and eosinophils decreased ( $p=0,613$ ). In the administration of placebo beverage, immediately to 30 minutes after exercise, neutrophils increased ( $p=0,359$ ), lymphocytes decreased ( $p=0,257$ ), monocytes decreased ( $p=0,146$ ), and eosinophils increased ( $p=0,549$ ). Neutrophils ( $p=0,003$ ) and monocyte ( $p=0,003$ ) had significant difference between both administration drink at 30 minutes after exercise. Lymphocyte and monocyte significantly decrease ( $p<0,05$ ) at intervention than placebo.

**Conclusions:** Maltodextrin and vitamin C combination drink effect on the decreasing of lymphocyte and monocyte 30 minutes after exercise.

**Keywords:** maltodextrin, vitamin C, after exercise, leukocyte differential counts

1. Student of Health Nutrition, Magister of Public Health, Faculty of Medicine, Universitas Gadjah Mada
2. Departement of Public Health, Faculty of Medicine, Universitas Gadjah Mada
3. Departement of Biochemistry, Faculty of Medicine, Universitas Gadjah Mada