

INTISARI

EFEK REHIDRASI AIR SIWALAN (*Borassus flabellifer* L.) KOMERSIAL DAN AIR KELAPA (*Cocos nucifera*) KOMERSIAL TERHADAP PROFIL OSMOLALITAS PLASMA ATLET SEPAK BOLA

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Latar Belakang : Saat ini Indonesia sedang berusaha untuk meningkatkan pencapaian di bidang olahraga khususnya sepak bola. Salah satu kekurangan pada tim Indonesia adalah perhatian terhadap manajemen asupan cairan pada atlet.. Ketika pemain berlatih sangat keras, mereka akan kehilangan cairan melalui keringat mencapai 3 liter. Performa yang optimal dalam pertandingan tidak akan diperoleh apabila atlet sepak bola mengalami dehidrasi. Oleh sebab itu, atlet sepak bola memerlukan asupan cairan cukup pada saat sebelum, selama, dan sesudah latihan. Pengembangan minuman isotonis dapat dibuat secara sintesis atau alami dengan pemanfaatan pada produk lokal yang salah satunya adalah dari air buah siwalan (*Borassus flabellifer* L.) yang banyak terdapat di Indonesia. Siwalan mengandung karbohidrat, glukosa dan elektrolit yang dapat digunakan untuk memperbaiki hidrasi bagi tubuh.

Tujuan : Membandingkan efek rehidrasi air siwalan dengan minuman air kelapa komersial terhadap osmolalitas plasma atlet sepak bola selama 2 jam periode rehidrasi setelah latihan.

Metode : Penelitian ini merupakan penelitian eksperimental dengan desain *cross-over* untuk membandingkan osmolalitas plasma antarkelompok pemberian air buah siwalan dan air kelapa. 16 atlet sepak bola akan dibagi 2 kelompok A dan B dan akan diambil darahnya sebanyak tiga kali, yaitu fase statis, *pre-test* dan *post-test*. Periode wash out selama satu minggu.

Hasil : Kadar osmolalitas plasma responden meningkat dari *baseline* 286.901 ± 1.766 mOsm/kg menjadi 287.640 ± 3.520 mOsm/kg setelah dilakukan tes ergometri. Perubahan osmolalitas plasma secara signifikan juga terjadi pada pemberian air kelapa, yaitu dari 287.008 ± 1.789 mOsm/kg (*well hydrated*) meningkat menjadi 289.684 ± 2.780 mOsm/kg (*euhydrated*). Kadar osmolalitas plasma setelah 2 jam pemberian kedua cairan secara signifikan mengalami penurunan, dari 287.640 ± 3.520 mOsm/kg menjadi 282.616 ± 4.178 mOsm/kg pada pemberian air siwalan ($p=0.000$). Sementara pada pemberian air kelapa menurun dari 289.684 ± 2 . Berdasarkan uji *mean* menggunakan *independent t-test*, diketahui bahwa tidak ada perbedaan yang bermakna antara pemberian air siwalan maupun air kelapa terhadap osmolalitas plasma ($p=0.340$).

Kesimpulan : Minuman air siwalan memiliki efek yang sama dengan air kelapa terhadap rehidrasi atlet sepak bola setelah melakukan aktivitas olahraga

Keywords : Minuman isotonik, dehidrasi, sepak bola, rehidrasi, osmolalitas plasma

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ABSTRACT

REHYDRATION EFFECT OF SIWALAN WATER (*Borassus flabellifer* L.) AND COCONUT BEVERAGE (*Cocos nucifera*) ON PLASMA OSMOLALITY OF FOOTBALL PLAYERS

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Intorduction : Indonesia is striving to develop its achievement in sport, especially football. The most crucial problem in Indonesian national team was poor attention in fluid management. After tough games, player will lost ± 3 kg of water. The best performance won't be achieved when players suffer dehydration. Thereby, football players require sufficient amount of fluid before, during, and after the match. Isotonic beverage could be produced synthetically or naturally by utilizing local product, for example siwalan water (*Borassus flabellifer*L.), which are plenty of amount in Indonesia. Siwalan contains carbohydrate, glucose, and electrolyte which can be useful for whole body rehydration.

Objective : The aim of this study was to examine the effectiveness of a *siwalan* water (*Borassus flabellifer*L.), compared to commercial coconut beverage for body rehydration and plasma osmolality recovery during a 2h rehydration period following exercise-induced dehydration.

Methods : Experimental cross-over design with one week wash out period was carried out in this study. Sixteen male football players (19.75 ± 1.18 yr of age, 60.24 ± 6.24 kg) divided into 2 groups, exercised for 30 min (or until 85% of maximum heart rate) on a cycle ergometer. Before exercise subjects were administered 250ml fluid. During rehydration subjects were serially ingested with a *siwalan* water and coconut beverage 300ml every 20 min for 2 h. Blood samplings were withdrawn pre-exercise, post-exercise, and 2h post-rehydration.

Results : After exercise, plasma osmolality increased from 286.901 ± 1.766 mOsm/kg to 287.640 ± 3.520 mOsm/kg and 287.008 ± 1.789 mOsm/kg to 289.684 ± 2.780 mOsm/kg on siwalan water and coconut water ingestion, respectively. After 2h rehydration period with siwalan water and coconut beverage, plasma osmolality significantly decreased from 287.640 ± 3.520 mOsm/kg to 282.616 ± 4.178 mOsm/kg and 289.684 ± 2 to 281.903 ± 5.096 mOsm/kg, respectively. There was no significant difference between two type of fluid ($p=0.340$).

Conclusion : Potentially siwalan water allowed effective rehydration as well as coconut beverage on plasma osmolality recovery for football players after exercise

Keywords : Sport drink, football, dehydration, rehydration, plasma osmolality

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