

Can Coconut Water be Preferred to Water as a Rehydration Beverage by Athletes?

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COLUMN ARTICLE

Fluid loss during strenuous, long-duration exercise is commonplace and can result in thermal stress, impaired cognition and cardiovascular function, accelerated fatigue, and impaired exercise performance. Therefore, most athletes have to be careful of fluid intake before, during and following exercise to not being affected negatively by fluid loss. Particularly, such recommendations on fluid loss when exercising in the hot and humid environment appears more important [1]. Although water is often suggested to many general fitness enthusiasts who may exercise for relatively short periods (< 75 minutes), carbohydrate-electrolyte sport drinks are highly recommended and appear to be the beverage of choice for most serious athletes-aerobic athletes in particular [2].

Some individuals prefer drinking natural beverage to manufactured sport drinks. For instance, many sport drinks include fructose and/or maltodextrin, artificial flavors and sweeteners, and added electrolytes (e.g. sodium, potassium) [2]. Coconut water may be considered as a more feasible alternative for these individuals. Coconut water is said to be a "superior form of rehydration", a "natural sports drink" and a low carbohydrate alternative to juices. Especially, it has

become more popular in the last few years in line with the increase in the demand of organic products [3].

Coconut water is naturally occurring, is very rich in potassium, contains sodium, chloride, and carbohydrate [4]. Clinically, coconut water may be used as an oral rehydration aid to replace fluid loss from the gastrointestinal tract in patients suffering severe dehydration due to diarrhea [1].

In relation to sport nutrition, coconut water has been reported to provide hydrating effects similar to those of carbohydrate-electrolyte sport drinks. Unfortunately, these studies have focused exclusively on hydration measures as primary outcome variables (following a period of dehydrating exercise and consumption of the assigned beverage), while not emphasizing actual exercise performance during the rehydrating period [5].

In a research conducted with 12 exercise-trained men who received four different beverage (bottled water, pure coconut water, coconut water from concentrate, or a carbohydrate-electrolyte sport drink) following a 60-minute bout of dehydrating treadmill exercise, little difference is noted between the four tested conditions associated to markers of hydration or exercise performance [5]. In another study that compares markers of hydration during submaximal

exercise and subsequent time trial performance when consuming water or coconut water, it is found that coconut water has not significant effects on improving time trial performance and also physiological variables measured [2]. Also, in a study that includes 30 authentic coconut waters for investigating the detection of added C4-plant sugars in coconut waters, it is noted that 38% of the 24 products had evidence of added sugar [6].

Coconut water contains a lot of potassium but this has little role in the rehydration process. Sodium, which is important for the absorption of fluid and fluid retention, is low in coconut water. Carbohydrate content is also low. Below are estimations of the composition of water, a sports drink and coconut water. It must also be noted that coconut water's composition may vary tremendously depending on many factors such as maturation process. Therefore, the values below are just given as rough figures for average coconut water [3].

Composition (per Liter)	Water	Sport drink	Coconut water
Sodium (mg)	< 100	420	280
Potassium (mg)	< 10	120	2000
Carbohydrate (g)	0	60 - 70	10 - 44
Kcal	0	240 - 280	40 - 176

Table 1: Composition of water, sport drink and coconut water.

As a result, studies found that the hydrating properties of coconut water are not different from water [5]. When sodium was added to coconut water the hydrating properties improved and the sodium enriched coconut water resulted in more complete hydration than plain water [6]. Besides, coconut water involves some carbohydrate and electrolytes and it is a natural way to ensure fluid balance. However, finding "natural" coconut water has great importance in this regard [3,7].

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