HYDRATION PACKS

Advanced Cellular Hydration*

This information is provided for the use of physicians and other licensed health-care practitioners only. This information is intended for physicians and other licensed health-care providers to use as a basis for determining whether to recommend this product to their patients. This medical and scientific information is not for use by consumers. The dietary supplement products offered by Designs for Sport® are not intended for use by consumers as a means to diagnose, treat, cure, prevent, or mitigate any disease or other medical condition.

Designs for Sport® Hydration Packs are a great-tasting, clementine-flavored electrolyte drink mix with a full spectrum of electrolytes, D-ribose, and vitamin C to support hydration and electrolyte balance.*

This product is ideal for adults with increased hydration and electrolyte needs, such as athletes, older adults, individuals with occasional diarrhea, those taking certain medications, and after exercise or sauna use.* It may be helpful for those who live or work in hot or humid climates where perspiration may be excessive.*

ELECTROLYTES AND HYDRATION

Designs for Sport® Hydration Packs contains the electrolytes necessary to maintain proper fluid balance and conduct action potentials in the nerves, muscles, and other types of cells, including sodium, potassium, chloride, and magnesium.[1,2] Daily water losses occur from respiration, urination, bowel movements, and perspiration.[3] During physical exercise and exposure to hot weather, sweating is the largest source of electrolyte and water loss.[3,4]

Drinking water with electrolytes, as featured in Hydration Packs, may be able to restore hydration more efficiently than water alone.[2–5] Unlike other brands, Hydration Packs are purposefully formulated to boost energy and support muscle recovery while remaining low in carbohydrates, with just 3 grams per serving from D-ribose and flavoring. That way, one can add the desired amount and type of carbohydrates as they see fit based on metabolic and athletic performance demands. According to the American College of Sports Medicine, hydrating before, during, and after exercise is crucial in preventing dehydration (defined as more than a 2% loss in body weight due to water deficit) and electrolyte imbalances.[5] Fluid loss occurs in both intracellular and extracellular fluid compartments and can potentially reduce plasma volume.[3] An electrolyte imbalance can disrupt normal bodily functions and may lead to symptoms like headaches, fatigue, or even severe conditions.[1,5] Electrolyte minerals are also essential for brain function, heart health, and muscle function.[1,6]

Hydration Packs feature sodium and potassium in a 1:1 ratio for optimal and balanced electrolyte support.* Sodium (Na) is the major extracellular cation that maintains normal extracellular fluid volume and cell membrane potential.[1] It also helps to stimulate thirst and water retention.[2,5] Hyponatremia is the most common electrolyte disorder, characterized by clinically low levels of sodium.[1] Potassium (K) is the major intracellular cation.[1] Sodium and potassium are exchanged across the cell membrane as part of active transport, referred to as the (Na+/K+) pump, which maintains cell membrane potential, regulates cell volume, and facilitates the active transport of other ions and nutrients across cell membranes. The Na+/K+ pump plays a central role in proper muscle contraction.[1,6] Potassium also plays a role in storing muscle glycogen, and when potassium levels are too low, it may reduce energy and endurance.[6]

A healthy Na/K ratio is associated with healthy aging and reduced risk of cardiovascular disease.[7] A high Na/K ratio is often associated with a diet high in processed and packaged foods and low in fruits and vegetables.[6] A cross-sectional study (n = 735) assessed the urinary Na/K ratio in older adults (≥ 65 years) and its association with hydration status and handgrip strength. Handgrip strength can be used to assess healthy aging, providing insights into limitations of daily life activities and determining adequate nutritional status.[6] Participants with higher values of urinary Na/K ratio had a twofold higher odds ratio for presenting with low handgrip strength. Moreover, dehydration was observed to be directly associated with low handgrip strength in older women.[6]

Magnesium is another critically essential mineral and electrolyte that is needed for adenosine triphosphate (ATP) production, muscle function, and neurotransmitter release. Chloride is an important electrolyte and a predominant extracellular fluid anion.[1] While zinc is not classified as an electrolyte, it has been shown to support athletic performance and healthy muscle recovery post-exercise.[8,9]

FORMULA HIGHLIGHTS

- Delivers higher amounts of sodium, potassium, chloride, and vitamin C than typical electrolyte powder formulas*
- Features a 1:1 ratio of sodium to potassium for a balanced electrolyte replacement*
- D-ribose for ATP energy production and muscle recovery*
- Increased bioavailability of magnesium and zinc with the bisglycinate form*
- Vitamin C for antioxidant support during and post-exercise*
- Great-tasting clementine flavor
- Sweetened with stevia and monk fruit
- Convenient stick-pack delivery for on the go
- Gluten-free, dairy-free, soy-free, non-GMO

D-RIBOSE FOR ENERGY PRODUCTION AND EXERCISE RECOVERY*

D-ribose is a five-carbon molecule essential for synthesizing nucleotides, coenzymes, nicotinate adenine dinucleotide phosphate, and nucleic acids.[10] D-ribose is often referred to as "molecular currency" due to its critical role in supporting ATP energy production during periods of high energy demands, such as high-intensity exercises or in certain conditions like cardiovascular disease.[10–12] After prolonged or high-intensity exercise, it may take days for muscle ATP status to return to normal through the adenine salvage pathway or de novo ATP synthesis.[10] For athletes, this can result in excessive muscle fatigue, cramping, pain, and stiffness, or inability to recover sufficiently in the days following physical activity.[10,11,13]

The body may rely on D-ribose for an alternative metabolic pathway to generate ATP, as D-ribose can bypass the rate-limiting enzyme (glucose-6-phosphate dehydrogenase) required for ATP production.[10] This may help maintain energy production during heightened energy demands and support athletic muscle performance, recovery, and exercise metabolism.[10,11] A double-blind crossover study of healthy adults (n = 26) compared the effects of 10 g/day of D-ribose supplementation to a control group while undergoing one hour of high-intensity interval exercise for three days. Compared to the control group, the adults receiving D-ribose supplementation exhibited significantly improved power output and significantly lower rates of perceived exertion and serum creatine kinase.[10] Clinical studies suggest that D-ribose may also help mitigate the effects of oxidative stress in the body, particularly during exercise.[10,14] A placebo-controlled clinical trial examined the impact of D-ribose supplementation on delayed onset muscle soreness (DOMS) in 21 untrained college students. DOMS is characterized by localized muscular tenderness and soreness, peaking 24 to 72 hours post-exercise, and may be related to unhealthy inflammatory responses and oxidative stress. The experimental group received 15 g of D-ribose in a 200 mL solution one hour before exercising and one, 12, 24, and 36 hours after exercising. Twenty-four hours after the exercise, the experimental group had reduced blood-related markers of muscle soreness, including creatine kinase, lactate dehydrogenase (LDH), myoglobin, and malondialdehyde (MDA), compared to the placebo group. LDH and MDA were significantly lower ($p < 0.01$) in the D-ribose group than in the placebo group. A decrease in MDA, a marker of lipid peroxidation, indicated a reduction in oxidative stress.[14]

VITAMIN C TO PROMOTE ANTIOXIDANT STATUS*

Hydration Packs include vitamin C to promote antioxidant status and support exercise recovery.* Vitamin C is essential for collagen synthesis, which supports bone strength, normal soft tissue healing, and skeletal muscle function.[15,16]

Ascorbic acid (vitamin C) also promotes the synthesis of norepinephrine from dopamine in adrenal chromaffin cells by serving as a cofactor for chromaffin granule dopamine β-hydroxylase (DβH).[17] As a potent water-soluble antioxidant, vitamin C can scavenge reactive oxygen species (ROS).[16] This may help to attenuate the effects of oxidative stress and inflammation associated with exhaustive exercise, particularly in non-trained athletes.[16] A cross-sectional analysis of 957 older women (aged 70 to 84) observed that a higher plasma vitamin C level was significantly correlated with higher muscle strength (handgrip strength), balance capability (standing on one leg with eyes open), and normal walking speed.[18]

Intense exercise can increase the production of ROS, free radicals, or reactive nitrogen species.[19,20] In the long term, exercise-induced oxidative stress can play a healthy role in the body by stimulating muscle regeneration and increasing the endogenous antioxidant system capacity.[19,20] However, in the short term, exercise-induced oxidative stress may exceed the body's antioxidant status capacity, causing damage to cells and tissues.[19] This can impair normal muscle contraction and potentially lead to muscle fatigue and reduced athletic performance.[20] A meta-analysis of 18 randomized controlled trials (n = 313) investigated the effects of vitamin C following acute exercise. The individuals who received vitamin C exhibited reduced oxidative stress (lipid peroxidation) and inflammatory responses (interleukin-6) immediately after a single exercise session and between 1 and 2 hours post-exercise.[19] However, human clinical studies suggest that vitamin C supplementation may be more effective in helping promote exercise performance and reducing oxidative stress in individuals with suboptimal vitamin C status.[19,21]

A systematic review of three preclinical studies suggests that those who receive vitamin C supplementation may exhibit reduced oxidative stress after a musculoskeletal injury and improved tissue composition in ligaments, tendons, and bones.[15] Vitamin C also assists in restoring vitamin E, another antioxidant that can help mitigate lipid peroxidation.[19] Oxidative stress can result from various dietary and lifestyle factors, including high stress, smoking, alcohol use, and toxin exposure. Therefore, vitamin C may be clinically relevant to athletes and non-athletes.*

OPTIMAL NUTRIENT STATUS

According to nutrition surveys, a significant portion of the U.S. population is deficient in potassium, zinc, magnesium, and vitamin C compared to the corresponding recommended dietary allowance (RDA) and dietary reference intake (DRI) for each (see Table 1).[22,23] This is likely due to inadequate consumption of fruits, vegetables, nuts, and rich sources of zinc.

Conversely, the U.S. average intake of sodium exceeds recommended values, causing a low potassium/sodium ratio of 0.6 (females) and 0.8 (males) versus the DRI recommended range of 1.7 to 2.1 (females) and 2.3 to 2.8 (males). According to the evolutionary perspective of human physiology, the potassium/sodium ratio may have ranged from 12 to 14 in diets of our Paleolithic ancestors. Modern ancestral- and Paleo-type diets are estimated to have a ratio of 1.4 to 5.2 (see details in Table 2).[24–28] According to studies that evaluated various ancestral diets, there is an apparent discordance between ranges of U.S. intakes of potassium, sodium, zinc, magnesium, and vitamin C and the probable evolutionary intakes.

HOW TO TAKE

Mix 1 stick pack (8 g) in 16 ounces of water per day.

SUPPORTS HYDRATION & BALANCED ELECTROLYTE REPLENISHMENT

100% MORE ELECTROLYTES VS A LEADING HYDRATION BRAND‡

1:1 SODIUM TO POTASSIUM RATIO FOR BALANCED ELECTROLYTE REPLACEMENT

GREAT-TASTING NATURAL CLEMENTINE FLAVOR, SWEETENED WITH STEVIA

Supplement Facts

Serving Size 1 stick pack (8 g)
Servings Per Container 14

Amount Per Serving		% Daily Value
Calories	10	
Total Carbohydrate	2 g	1%**
Vitamin C (as Ascorbic Acid)	400 mg	444%
Magnesium (as TRAACS® Magnesium Bisglycinate Chelate Taste Free)	100 mg	24%
Zinc (as Zinc Bisglycinate Chelate)	5 mg	45%
Chloride (as Sodium Chloride)	840 mg	36%
Sodium (as Sodium Chloride)	500 mg	22%
Potassium (as Potassium Bicarbonate, Potassium Glycinate Complex)	500 mg	11%
D-Ribose	1 g	*

**Percent Daily Values are based on a 2,000 calorie diet.
*Daily Value not established.

Other Ingredients: Natural flavor, citric acid, PhytoSweet® blend (rebaudioside M, steviol glycosides [from *Stevia rebaudiana* leaf]), luo han guo extract (fruit), silicon dioxide.

NSF CERTIFIED SPORT

SOY-FREE · GLUTEN-FREE · DAIRY-FREE · NON-GMO · HIGHLY ABSORBABLE* · THIRD-PARTY TESTED

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

‡Total electrolytes per serving vs Liquid I.V. Hydration Multiplier Powder Packets, a leading brand per Stackline sales data January 2025

For a list of references cited in this document, please visit:
https://www.designsforhealth.com/api/library-assets/literature-reference---electropure-hydration-tech-sheet-references
Dosing recommendations are given for typical use based on an average 150 pound healthy adult. Health-care practitioners are encouraged to use clinical judgement with case-specific dosing based on intended goals, subject body weight, medical history, and concomitant medication and supplement usage.

Table 1. DRI/RDA for electrolytes, Mg, Zn, and vitamin C compared to intakes in the U.S. versus averaged ancestral diets

	DRI/RDA 2,000 kcal (female) 2,500 kcal (male) ages > 19 yrs[22]	Nutrient intake averages & ranges from U.S. survey NHANES 2001-2002 ages > 20 yrs average 2,216 kcal[23]	Averages & ranges of daily nutrient intakes per 2,000 kcal from five studies of Paleo-style diets[24-28]**
Potassium (K)	2.6 g (F)	2.3 g [1.3 to 3.6] (F)	6 g [4.4 to 7]
	3.4 g (M)	2.3 g [1.8 to 4.8] (M)	
Sodium (Na)	< 1.5 g (19 to 50 yrs) < 1.3 g (51 to 70 yrs) < 1.2 g (> 70 yrs)	2.8 g [1.7 to 4.3] (F)	1.7 g [0.5 to 3.2]
		3.9 g [2.2 to 6.1] (M)	
K/Na ratio	1.7 to 2.1 (F)	0.8 (F)	3.5 (1.4 to 14)
	2.3 to 2.8 (M)	0.6 (M)	
Magnesium	320 mg (F)	281 mg [128 to 505]	496 mg [388 to 584]
	420 mg (M)		
Zinc	8 mg (F)	12.9 mg [5.4 to 22.3]	22 mg [13.9 to 29]
	11 mg (M)		
Vitamin C	75 mg (F)	82 mg [24 to 180]	452 mg [277 to 680]
	90 mg (M)		

** See data from the five studies in Table 2.

Table 2. Estimations of daily intakes of electrolytes, magnesium, zinc, and vitamin C per 2,000 kcal from five studies of Paleo-like diets

	Averages and ranges of daily intakes/2,000 kcal from five studies of Paleo-like diets[24-28]	Estimated intakes/2,000 kcal from five studies of ancestral diets				
		Eaton B, 1997[24]	**Cordain L, 2002[25]**	**Jonsson T, 2009[26]**	**Chenard CA, 2019[27]**	**Paul C, 2019[28]**
Potassium (K)	6 g [4.4 to 7]	7 g	8.2 g	4.6 g	4.4 g	6.1 g
Sodium (Na)	1.7 g [0.5 to 3.2]	0.5 g	0.66 g	3.2 g	2.7 g	1.2 g
K/Na ratio	3.5 (1.4 to 14)	14	12	1.4	1.6	5.2
Magnesium	496 mg [388 to 584]	not reported	584 mg	388 mg	513 mg	497 mg
Zinc	22 mg [13.9 to 29]	29 mg	24.9 mg	13.9 mg	24.4 mg	19 mg
Vitamin C	452 mg [277 to 680]	402 mg	680 mg	277 mg	410.5 mg	492 mg

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