

Optimal hydration recipes

NOT MEDICAL ADVICE

Everyone says 'drink more water.' It's the most common health advice on the planet. But what if the problem isn't how much you drink — it's how well your body absorbs it?

How Your Gut Actually Absorbs Water

In the 1960s, researchers studying cholera discovered something remarkable: adding glucose and sodium to water dramatically increased intestinal absorption. The mechanism is a protein called SGLT1 — a sodium-glucose cotransporter sitting in the lining of your small intestine. When glucose and sodium arrive together, SGLT1 pulls both across the intestinal wall, and water follows. Without this mechanism, a significant portion of the water you drink simply passes through you.

This discovery led to Oral Rehydration Solution (ORS), which the WHO credits with saving tens of millions of lives. But you don't need to be treating cholera to benefit from the same science. Anyone drinking plain water all day is leaving absorption efficiency on the table.

Beyond Glucose: Stacking Absorption Pathways

Your gut has multiple independent sodium-coupled transporters. SGLT1 handles glucose, but separate transporters handle amino acids like glycine. Activate both simultaneously and you're pulling water through two parallel channels instead of one.

There's also a trick with carbohydrate form. Maltodextrin — a glucose polymer — breaks down into glucose right at the intestinal wall, feeding SGLT1 continuously with minimal osmotic cost. Free glucose spikes absorption briefly; maltodextrin sustains it. Using both together gives you immediate and prolonged absorption in a solution that stays comfortably hypotonic.

The Optimised Recipe

After extensive research and multiple rounds of refinement against the WHO ORS formula and current sports hydration science, here's what we landed on. All quantities are per 1 litre (1 US quart) of water:

Ingredient	Metric	Imperial	Why
LoSalt (66% KCl / 34% NaCl)	1 g	¼ tsp	Provides potassium (most diets lack it) + sodium for cotransport
Table salt (NaCl)	0.25 g	1 small pinch	Additional sodium to drive SGLT1; omit if diet is sodium-heavy

Trisodium citrate dihydrate	0.6 g	⅛ tsp	Sodium source + citrate buffer (same compound used in WHO ORS)
Citric acid	0.3 g	1 small pinch	Balances pH, improves taste, mildly aids mineral absorption
Glucose / dextrose	3 g	¾ tsp	Activates SGLT1 immediately — the primary water absorption mechanism
Maltodextrin (DE 15-19)	12 g	1 tbsp	Releases glucose slowly at the gut wall; sustains SGLT1 at low osmolarity
Glycine	2 g	½ tsp	Activates a second, independent sodium-coupled water absorption pathway
(optional: Magnesium (elemental, as citrate))	0.1 g	per label	Supplements a common dietary gap; citrate form absorbs well
L-Alanine (optional)	1.5 g	½ tsp	Activates a third absorption pathway; marginal benefit given limited sodium
Water	1 L	1 US qt (34 fl oz)	

Serve cool (around 15°C / 59°F). Make 2-3 litres (2-3 quarts) daily, every litre identical. Pre-mix the dry ingredients in a jar — about 19 g (roughly 1.5 tablespoons) of powder per litre — and you've got a month of better hydration for the price of a single sports drink. Total cost: roughly 10-15p / 10-15¢ per litre.

Why This Beats Commercial Products

Most commercial electrolyte products fall into two traps. Budget options are essentially sugar water with a pinch of salt — too much sugar, not enough sodium, no amino acids, no thought given to osmolarity. Premium products charge £1-2 / \$1-2 per serving for simpler formulations, often proudly removing sugar entirely — which eliminates the very mechanism that makes electrolyte drinks work better than plain water.

This recipe activates two parallel absorption pathways (SGLT1 via glucose and amino acid cotransport via glycine), uses maltodextrin to sustain absorption at low osmolarity, provides potassium and magnesium that most Western diets lack, and buffers pH with trisodium citrate. At roughly 74 calories per litre — less than an apple — the caloric cost is trivial.

The Budget Supermarket Version

No trisodium citrate, dextrose, or maltodextrin? This version uses ingredients available in any supermarket. It activates SGLT1 at about half efficiency (table sugar is 50% fructose, which doesn't drive water absorption) but still vastly outperforms plain water. All quantities per 1 litre (1 US quart):

Ingredient	Metric	Imperial	Why
LoSalt (or any potassium salt blend)	1 g	¼ tsp	Potassium + sodium; replaces what most diets miss
Table salt	0.25 g	1 small pinch	Sodium to pair with sugar for SGLT1 activation
Baking soda	0.5 g	⅛ tsp	Sodium + alkaline buffer; replaces trisodium citrate
Table sugar	15 g	1 level tbsp	Activates SGLT1 (at ~50% efficiency — half is fructose)
Water	1 L	1 US qt (34 fl oz)	

Roughly 60-70% as effective as the optimised version. Won't taste as clean (baking soda is slightly soapy), but works well and costs almost nothing.

The Bare Minimum: Sugar and Salt

Nothing but a kitchen and tap water? This is the simplest possible version — just sugar, salt, and water. It's based on the same science as WHO Oral Rehydration Solution, scaled down for daily sipping rather than treating dehydration. Per 1 litre (1 US quart):

Ingredient	Metric	Imperial	Why
Table sugar	15 g	1 level tbsp	Provides glucose to activate SGLT1 cotransporter
Table salt	0.5 g	⅛ tsp	Provides sodium — the other half of the SGLT1 mechanism
Water	1 L	1 US qt (34 fl oz)	

That's it. Stir until dissolved. It won't taste great, a squeeze of lemon or lime helps. You lose the potassium, magnesium, buffering, amino acid pathway, and optimised osmolarity — but the core SGLT1 mechanism still works. This is still meaningfully better than plain water for hydration.