

Replenishment Drink ‘DIP-SIP’

Background:

Human body functions best within a fixed range of internal milieu, for which temperature is a crucial component. Warm climate often causes physical discomfort and cognitive apathy, leading to deterioration of individual's physical performance. The most detrimental effect of heat stress is dehydration, due to sweating. In prolonged sweating blood volume gets affected leading to hypohydration. Sweating along with water loss, produces loss of electrolytes, mainly sodium (Na^+) and chloride (Cl^-), along with magnesium (Mg^{++}), zinc (Zn^{++}), calcium (Ca^{++}) etc. If sweat loss is replaced only by water this leads to situation where body contains fewer electrolytes than in normal state (hypo-osmotic). Commercially prepared sports and energy drinks have varying concentrations of glucose and sodium, ranging from hypertonic to hypotonic with respect to plasma. Apart from sodium and carbohydrate, drinks seldom replenish other electrolytes. Some drinks add caffeine for commercial acceptance but has antagonistic physiological effect on user. In such circumstances, DIPAS developed a “**Replenishment Drink DIP-SIP**”.

Potential Benefits:

- Providing fluid, electrolyte, and carbohydrate replacement during physical work under heat stress.
- Providing rapid rehydration following heavy or prolonged physical work, thereby facilitating recovery from heat injury.
- Reducing the increase in core temperature (CT).
- Reducing the increase in Mean skin temperature (MST).
- Reducing cardiovascular stress.
- Additional supplementation (like Copper, Selenium, Manganese, Magnesium, etc) to compensate for electrolyte loss during hypohydration.
- Encouraging fluid intake due to extra palatability and flavour.
- Beneficial in delaying decrement of physical performance.

Applications:

- DIP-SIP can help alleviate heat stress and dehydration for both dry and humid heat.
- DIP-SIP is able to tackle dehydration while working under high ambient heat stress.
- DIP-SIP helps delay onset of fatigue and stress if taken prior to heat stress exposure.
- DIP-SIP helps to regain lost electrolytes, when consumed at regular intervals during exposure.