



Osmolality of Isotonic Beverages on the Croatian Market

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INTRODUCTION

Isotonic beverages are commonly used by **athletes and active individuals** to maintain adequate hydration during intense physical activities. Over the past two decades, these beverages have become more popular among athletes and the food industry, leading to a global increase in their production and market availability.

The **European Food Safety Authority (EFSA)** states that isotonic beverages must have an osmolality ranging from 270 to 330 mOsm/kg, corresponding to the osmolality of human body fluids.

OBJECTIVE

Many sports beverages labeled as isotonic and designed for physically active people are available on the Croatian market. This study measured the osmolality of **18 isotonic beverages** available on the Croatian market. The results were compared to the isotonic range prescribed by EFSA.



CONCLUSION

Thirteen isotonic beverage samples had osmolality values between 279 and 330 mOsm/kg, meeting the established criteria for isotonicity. In contrast, **five samples** labeled as isotonic had osmolality values between 331 and 373 mOsm/kg, classifying them as **hypertonic**. According to EFSA requirements, such products **should not be labeled as isotonic**.

The hypertonicity of isotonic beverages is caused by a **higher content of carbohydrates, sugars and salts**, which increases the osmolality of the beverages.

The presence of mislabeled isotonic beverages highlights the necessity for stricter regulation and quality control of such products on the Croatian market.

MATERIALS AND METHODS

The osmolality of the isotonic beverage samples was measured using a **cryoscopic osmometer**, an instrument that determines osmolality based on the **freezing point depression method**.

RESULTS

Table 1. The osmolality of isotonic beverage samples determined using a cryoscopic osmometer

SAMPLE	Osmolality (mOsm/kg)
1	282
2	290
3	331
4	373
5	306
6	307
7	330
8	340
9	279
10	306
11	333
12	339
13	283
14	308
15	314
16	292
17	310
18	308



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