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Research Article

Analyses Of The Concentration Of Sodium Chloride, Sodium, Sugars And Ash In Isotonic Drinks Sold In The City Of Governor Valadares - Minas Gerais

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Abstract

Introduction: The isotonics are products that use hydration to lose weight during high resistance exercises, compost predominantly for water and electrolytes such as sodium and potassium, as well as to contain minor amounts of acids, antioxidants, preservatives and antioxidants. Objective: The objective of this work is to analyze the characteristics of isotonic substances that are related to the theory of sugars, sodium chloride, sodium and salts, and to compare them with nutritional counseling and vigilant legislation. Methodology: The present work is based on an analytical study of the quantitative and qualitative experimental type. Foram analyzed chlorine concentration of soda, sugar and cinzas. With the help of software R (R Development Core Team, 2017), the data were submitted for analysis of variance (ANOVA) for repeated mediations, to verify the homogeneity of the media. Results: As amostras present values of total sugar between 9.14% and 23.92%. Our interest purchases include a difference in inorganic matter between analyzes of 10.02% and 10.09%. Yes a sodium chloride analyte can take note of a variance between 0.27% and 0.60% and a soda has a variation between 1080 mg/L and 2400 mg/L. Amostra I3 presents values that describe our descriptive and superior descriptions as permitted by this legislation. Conclusion: However, it is concluded that the analyzes analyzed in I2 are more adequate than those that theories of sugar and soda have given the natural ingredients present in the baby. Our interest purchases include a difference in inorganic matter between analyzes of 10.02% and 10.09%. Yes a sodium chloride analyte can take note of a variance between 0.27% and 0.60% and a soda has a variation between 1080 mg/L and 2400 mg/L. Amostra I3 presents values that describe our descriptive and superior descriptions as permitted by this legislation. Conclusion: However, it is concluded that the analyzes analyzed in I2 are more adequate than those that theories of sugar and soda have given the natural ingredients present in the baby. Our interest purchases include a difference in inorganic matter between analyzes of 10.02% and 10.09%. Yes a sodium chloride analyte can take note of a variance between 0.27% and 0.60% and a soda has a variation between 1080 mg/L and 2400 mg/L. Amostra I3 presents values that describe our descriptive and superior descriptions as permitted by this legislation. Conclusion: However, it is concluded that the analyzes analyzed in I2 are more adequate than those that theories of sugar and soda have given the natural ingredients present in the baby. Amostra I3 presents values that describe our descriptive and superior descriptions as permitted by this legislation. Conclusion: However, it is concluded that the analyzes analyzed in I2 are more adequate than those that theories of sugar and soda have given the natural ingredients present in the baby. Amostra I3 presents values that describe our descriptive and superior descriptions as permitted by this legislation. Conclusion: However, it is concluded that the analyzes analyzed in I2 are more adequate than those that theories of sugar and soda have given the natural ingredients present in the baby..

Keywords: Chaves; Isotonic; Hydroeletrolíticos; Bromatological Analysis; Nutritional Rotulagem; Legislation

Introduction

The isotonic so-called technical hydrolytic supplement supplements for athletes, defined as a product that aids hydration to be lost during high resistance exercises [1].

Compost predominantly for water and electrolytes such as sodium and potassium, as well as to contain minor amounts of sugars, preservatives, acidulants, antioxidants, flavoring and currants [2,3].

Consumption of isotonic babies initiates our United States around the age of 60, when the University of Florida football coach wanted a solution that resolved the physical performance of athletes during intense and caloric activities [4].

It should be noted that the University's pseudonyms will develop the formula, which can be used in its composition, carbohydrates and minerals, to be tested during a football match. The players will present a higher yield and higher design after the consumption at no interval of the game. Almost 20 years have passed since the baby was taken to Brazil, since then he has been in the supermarket store [3].

Hydroelectrolytic baths have a plasma-like formulation, which facilitates the repositioning of liquids and electrolytes lost during their physical activity [5]. Interestingly, it can cause human health problems when consumed in excessive amounts, then it can have its own synthetic currents. These additives are responsive to the variety of available cores, making them more attractive to consumers. Some deletion effects associated with their consumption are due to allergic reactions, asthma and hyperthyroidism and hyperactivity disorder (TDAH) [6].

Studies show the use of isotonic as a source of hydrolytic treatment for rehydration and the repositioning of minerals and vitamins during vomiting and diarrhea [7-9].

For example, diarrhea aguda, as a major complication and dehydration or improvement of the state of hydration should be one of the first attitudes to being taken after abortion, mainly from diarrhea [9].

Studies have shown that even more common Crohn's practices in nutritional therapy adapt to isotonic use in order to increase diet and restore patient fluid intake [10].

A characterization of a product is based on its physical, chemical and sensory composition [11]. The inorganic residue of a determined food is called chinzas, sending the result of the organic matter. You can find in it a chemical composition large amount of potassium, sodium, calcium and magnesium, small amounts of aluminum, iron, copper, manganese and zinc. It is also possible to observe traces of argon, iodine and fluorine. Sending assimilation is constantly used as a criterion for identifying food products [11].

The legislation determines for isotonic babies a concentration of sodium between 460 and 1150 mg/L and a limit for potency of 700 mg/L. Refer to the amount of carbohydrates you can count on 8% (m/v). In relation to fruit, when added, can not exceed 3% (m/v) of the product taken for consumption [1].

Second to ABIR (Brazilian Association of Refrigerant and Non-Alcoholic Beverages Industries) the consumption of isotonic baby breeds increased by 20% between 2016 and 2019. the high habits of this time about the population with the increase in the practice of physical activity, a good diet allied with adequate hydration, for better body results [12].

Diante disso este trabalho teve comoobjectively, analyze the characteristics of the isotonic sabor uva quanto ao theory of sugar, sodium chloride, soda and cinzas and compare with the nutritional and legal legislation vigente.

Materials and Methods

Analytical study of the experimental quantitative and qualitative type.

Local and period of fishing

It was conducted by the Nucleus Scientists of Saudi Arabia at the University of Rio Doce (UNIVALE), located in the city of Governor Valadares-MG, in the Pharmacognosy Laboratory. Foram arnazenados e submetidos à annalises no period de setembro a autubro de 2021.

Experimental Design

Foram analyzed theories of reducing glycides in glycosis, glycidios not reducing in sucrose, cinzas, sodium chloride and sodium of different brands and compared with the descriptions in nutritional rotation and recommended in the legislation.

Acquisition of Material-Prima

Initially, three supermarkets located near the Governor Valadares-MG's office were visited, where a sale of quasi-brands and tinsmiths was carried out. Since then we have selected three brands that tinham in common with (uva) and that we found our estab-

lished visits. These products are transported in their original packaging inside the isothermal cauldron (collar) at ambient temperature and placed in the UNIVAL laboratory for the analysis.

Bromatological Analysis

The isotonic formulations are incorporated into their original packaging by refrigeration (approximately 7 ° C) in the laboratory for the analysis of glycotic reductions, non-sucrose-reducing glycides, zincs, sodium chloride.

Glycidios reduce glucose and glicidios do not reduce glucose

Following Fehling's methodology, we have developed the methods of Reducing Glicides in Glicose and Glicides are not reduced in sucrose for the determination of the theory of sugars sent the determined results in ml of glycose and sucrose per cent, m/m of amostra [13].

For the determination of reducing glycides in glycosides were added 5 g of the mixture in a beaker of 100 mL. Transferred to a 100 mL volumetric well with distilled water. Complete the volume and agitation. Filtered with filter paper and the product filtered with the phrase Erlenmeyer of 250 mL. The filter was transferred to the burette. Colocado has a 250 mL boiler, with a 10 mL pipeline, each with Fehling A and B solutions and an additional 40 mL of distilled water. Foi aquecido had to ebulition. Added, as gotas, the solution of the burette on the solution of the ball in the elimination, agitating always, that this solution passes from azul to color. For determination of glycides not reducing in sucrose, was transferred, with the aid of a pipette, 20 mL of filtered filtration in reducing liquids in glycose, for a 100 mL volumetric swab, weigh 5 g of amostra and transfer to a 100 mL volumetric swab with auxiliary distilled water. It was added the chloride acid (about 1 mL). Followed by bathing in banho-maria at (100 ± 2) ° C for 30 to 45 minutes. It was dispersed and neutralized with sodium carbonate, added to the sodium hydroxide solution at 40%, with the aid of indicator paper, the volume was completed with distilled water and agitated.

Ashes

It was used 10 g of amostra in a capsule, preferably watered at mufla at 550º C, resuspended in desiccator at ambient temperature and temperature [13].

Sodium and sodium chloride

For determination of sodium chloride using Mohr's argentometric method, for titration with nitrate de prata [13]. It weighed 5 grams of amos, transferred to a volumetric volume of 500 mL, with a yield of 200 mL of distilled water and deixed for 2 hours. After 2 hours the volume with distilled water was agitated and agitated. Transfer with a volumetric pipette, 10 mL solution to a 250 mL Erlenmeyer flask. Add 50 mL of distilled water and 2 gums of potash chromium solution to 10% and titled with a 0.1 ml solution. Second to Brazilian Society of Hypertension (SBH) [26], o NaCl (sodium chloride) is composed of 60% chlorine and 40% sodium, then contains 1g sodium chloride equivalent to 400 mg sodium (SBH, 2020). Foi realized conversion nesses valors to identify the amount of soda.

Nutritional rotary analysis

The routers were analyzed using nutritional information and the ingredients used. From amostra I1 the ingredients described in our roots are: water, sucrose, maltodextrin, sodium chloride, sodium citrate, phosphate potash, monobasic, citric acid acidifying, aromatizing and artificial currants (Bordeaux S, orange yellow feverfew; da amostra I2: water, organic cocoa water, organic tapioca, uva sugar, organic lemon juice, natural aromas and sea salt; da amostra I3: water, water, sodium chloride, potassium citrate, magnesium chloride, calcium chloride, potassium phosphate, vitamins B3, B6 and B12, flavoring, acid regulator, citric acid and sequestered citric acid of disodic soda, potash sorbato preservatives and potash bezonato, edulcorante,

Statistical analysis

The students were analyzed in a Causal Delineation (DIC). For glycid parameters, sodium chloride and cinemas, use an experiment in fatal scheme (3 x 1), three commercial markets (I1 I2 and I3), resulting in the I2 brand treating an industrialized product based on natural ingredients. Total three treatments, with three repetitions/each (tripled). With the help of software R (R Development Core Team, 2017), the data were submitted for analysis of variance (ANOVA) for repeated media, to verify the homogeneity of the media. The media that present homogeneous ($p > 0.05$) were submitted to Duncan's test. Values-p are considered significant when less than 0.05.

Results

Analysis of the media presented in Table 1 shows the composition of tinctures, Reducing glycides in glycose (GRG), non-reducing glycides in sucrose (GRNS), and sodium chloride, in three different brands. Note that there is a difference between analyzed coefficient of variation media and all analyzed analyzes. Reducers (AR), non--Reducers (ANR) and Sodium chloride (NaCl) have a difference between $p < 0.01$. Yes all users will find $p < 0.0001$ and then they will verify a significant variation of $p < 0.005$.

Sources of variation	GL	Square Media				
		CZ (g)	AR (% glucose)	ANR (% sucrose)	Total Sugar (%)	NaCl (%)
Treatment	2	0.005 *	13,729 **	85,037 **	167,050 ***	0.061 **
Residue	6	0.001	0.661	4,335	2,935	0.005
CV (%)	-	0.27	15.64	17.45	10.00	18.58
Media	-	10.07 ± 0.04	5.20 ± 1.98	11.93 ± 4.95	17.12 ± 6.63	0.39 ± 0.14

Table 1: Summary of media analysis, square media, references to interest (CZ), reducerates (AR), non-reducerates (ANR) and sodium chloride (NaCl) of different isotonic markets.

Source: Prepared by the author (2021).

CV: Coefficient of Variation; ***. **, * respectively, not significant, significant to p < 0.0001, p < 0.01 and p < 0.05.

Ashes

For the sake of figure 1, it is possible to analyze the theories of truths found in different isotonic markets. Note a significant difference between brands I1 in relation to other markets (I2 and I3) that do not present significant differences between them.

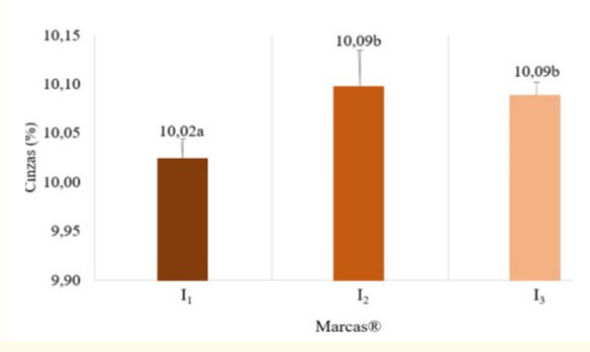

Figure 1: Media values (± EP) of different isotonic markets.

Source: Prepared by the author (2021).

a, bDifferent media for different letters differ by agreement with the Duncan test (p < 0.05).

Glucose sweeteners and non-sucrose sweeteners

Analysis of the media presented in figure 2 (a) refers to reduced sugars in glucose presenting a significant difference between I2 and I1 and I3. In figure 2 (b), the data referring to sugars are not reduced in sucrose. In market I2, there is a lower index of sucrose in relation to other analyzed markets.

Total sugars

The analysis of variance presented in Figure 3 compares the theories of all sugars between the three isotonic types. A figure indicates that the I2 mark may have a lower index of total sugars in relation to others, which will present higher values. And everything differs between them significantly.

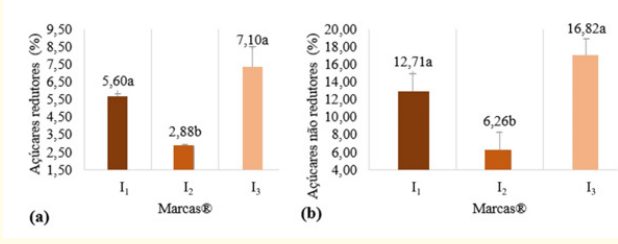

Figure 2: Median values (± EP) of reducing sugars (a) and non-reducing sugars (b) of different isotonic markets.

Source: Prepared by the author (2021).

a, b Different media for different letters differ by agreement with the Duncan test (p < 0.05).

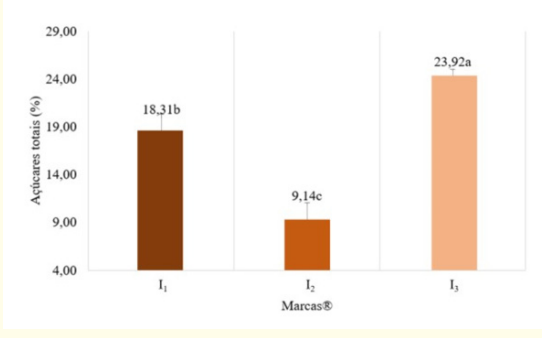

Figure 3: Media values (± EP) of total sugars from different isotonic markets.

Source: Prepared by the author (2021).

a, b Secondary media for different letters differentiated by agreement with the Duncan test (p < 0.05).

Sodium and Sodium Chloride

The analysis of variance presented in Figure 4 refers to the theories of sodium chloride, showing that I1 and I3 markets have major theories in comparison to the I2 market.

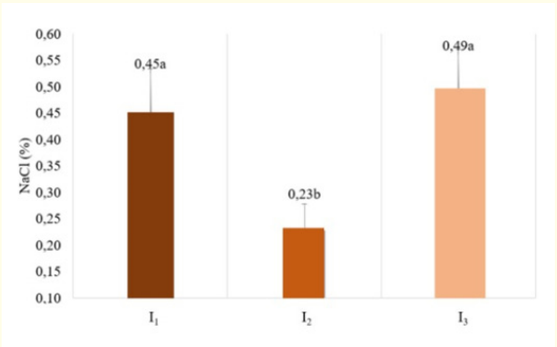

Figure 4: Media values (± EP) of chlorotic sodium of different isotonic markets.
Source: Prepared by the author (2021).
a, b Secondary media for different letters differentiated by agreement with the Duncan test ($p < 0.05$).

In table 2, is shown in conversionof sodium chloride and sodium of isotonic markers selected for analysis. Note that as markets present different values, send to the I3 mark with values but higher followed by the I1 and I2 marks.

Isotonic:	100 mL sodium chloride amount:	mg of soda em Product 1L:
I1	0.54g	2160 mg/L
I2	0.27g	1080 mg/L
I3	0.60g	2400 mg/L

Table 2: Summary of values of conversion of sodium chloride (NaCl) to sodium of different isotonic markets.
Source: Prepared by the author (2021)

In Table 3 observed conversion of sodium mg values in 200 mL we find our rotors for 1 liter of product. Please note that as markets we present our rototores close to soda.

Isotonic:	mg of soda em 200 mL to product:	mg of soda em Product 1L:
I1	99 mg	495 mg/L
I2	104 mg	520 mg/L
I3	108 mg	540 mg/L

Table 3: Summary of values valued by our rotors. Sodium mg conversion to 200 mL of product for 1L of product in different isotonic brands.
Source: Prepared by the author (2021)

Discussion

The analysadas samples had in their labeling distinct ingredient. Sample I2 contains more natural ingredients when compared to other amos.

Ashes

With relation to theories of interest, it is possible to observe that market I1 has a lower concentration of interest in relation to other markets. In his rotation he describes only ingredients that consist of inorganic matter. I mark I3 in its rotation which describes the addition of various ingredients such as potassium citrate, magnesium chloride, potassium phosphate, sodium chloride among others, which can enrich the inorganic matter of the product. In Amostra I2, in its rotation there are natural ingredients that are mineral sources, which can result in a greater value in our theories of science. It's articles on bromate analgesic analgesic behaviors that do not support cinematic theories, do not send possible comparisons of this type.

Glucose reducers in glucose and no sucrose reducers

Some adducts such as carbonyl and cetonic groups, in the presence of an oxidant, can be oxidized with an alkaline solution. These are reducing sugars (AR), which are simple sugars, such as glucose and fructose some disaccharides, such as maltose (formed from glucose) and lactose (formed from galactose and glucose) [14].

Non-Reducing Acids (ANR) require hydrolysis of glycosidic ligation to oxidize, an example is sucrose, which is formed as a ligation group between a functional group of a glycoside molecule or a functional group of two molecules. Hydrolysis of sugars without reducers is generally done with strong acid or with the use of enzymes, as invertase, for sucrose [14].

Athletic babies are considered to be babies with high glycemic index by presenting rapid absorption when ingested. During physical activity, glycemic index media foods are more tolerant and have greater gastric emptying ability compared to high glycemic indexes [15].

The sweeteners that are not and are not sweeteners that have high glycemic index. The isotonic of markets I1 and I3 present the elevated values of sugar from high glycemic index in comparison with the I2 market which present in them more natural substances and thus, less quantity of sugar.

Total sugars

The formula of isotonic babies, different sources of carbohydrates are measured to better adjust the osmotic pressure, caloric content and sabor [16]. Therefore, the Nutritional Recommendations of the World Health Organization (2018) stipulate that the intake

of "added sugars" not derived from natural products should not exceed 10% of the total calories of the diet [17].

There are various mechanisms that lead to the consumption of "addictive sugars" in health problems, including acid corrosion of the esophageal dentition produced by bacteria that metabolize sugar, authorizing prejudice to the energy balance (energy) is called or calorie intake in liquid form and other donations not transmitted such as diabetes, cardiovascular donors, cancer and neurodegenerative donors [18].

The total amount of sugar confiscated was not presented in the box identifying it with the I2 mark significantly lower than other marks. This percentage may be related to the nutritional composition described in this Hydroelectrolytic Root which constitutes ingredients of natural origin with the addition of sugar. There are three brands that differ, as well as the distance between them, which can be explained by the presence of different ingredients in their compositions.

In agreement with the National Agency for Sanitary Vigilance (ANVISA), the carbide foods can be constituted at 8% (m/v) of the product ready for consumption [1]. Conforms to rotulagem information, on the market I1 teria 6% of sugarcane nutrition information described by rotulo and was found 18%. Yes, the I2 market has 5.5% total sugar, while agreement with analysts is 9.14%. And on Thursday, the I3 market will have a 3.9% increase in sugar and a result of 23.92%. We can observe that all markets are within the established limits of vigilant legislation and nutritional information described in the plan. We do not study studies for any comparison with the results of this work.

The World Health Organization recommends that the United States provide information on the best foods to eat, information that should be made easy to understand [19]. Therefore, in Brazil, as of 2003, the provision of foodstuffs has been fiscalised in accordance with the specific legislation of the National Sanitary Vigilance Agency (Anvisa), which provides mandatory and clear information for all packaged foods and ensures that they are consumed. what do you consume [20]?

When it comes to nutritional information we have our food rotations, the consumer can not grind his product if he has his preferences and necessities, but also includes all the ingredients in the product [21]. Therefore, it is understood that the industry is developing an important paper in food supply with authentic information and easy-to-understand compensation, and this responsibility is subject to taxation by a competent body [22]. Next study can verify that the results found for all sugars in isotonic markets are distant from the values given by manufacturers, all numbers of sugars are superior to the nutritional root.

Sodium and sodium cloreto

Traversed the conversion of sodium into sodium and sodium could be compared to an analysis carried out with the values found in the plan and determined in Resolution RDC nº 18 of 27 April 2010 by the Ministry of Saudi Arabia [1].

Na marca I2, the concentration of soda per mg/L is shown in the previous legislation. Our brands I1 and I3 the values of soda ficaram acima recommended. Diante isso fica evidente that the three markets are being scaled to analyze some of them, I2 present the value of soda within the company firm in legislation, vale result that these values are stable and fim to prevent and consume malicious products of the product excess soda can cause the organism [23,24].

In accordance with the rotating observe that we amostra I1, I2 and I3 have a sodium amount of 495 mg/L, 520 mg/L and 540 mg/L respectively, while within the scope of this legislation, porem, our analyzes as amostras I1, I2 and I3 obtiveram diferentes do descritos no rotulo sendo eles 2160 mg/L, 1080 mg/L e 2400 mg/L respectively. Amostra I2 believes that there is a lower value of sodium per mg/L in addition to the value that the legislation determines for concentrations of our products for consumption which is from 460 to 1150 mg/L.

Second Ferreira study and collaborators [3] that we analyze 20 isotonic amos of different brands and brands, verify that 55% of the amos have different values of soda that are stipulated in the root, and show a TV the value less that is described by rotulagem. In other words, you will have greater value than you describe. Todavia, studies of Castro, Giatti and Barreto [25] he demonstrated that the whole theory of soda presents the composition of foods caused by serious dementia in patients undergoing cardiovascular disease, progression of chronic renal disease, cerebral vascular accident, ventricular ventricular hypertrophy. Also has a relationship with the increase in arterial pressure that due to the other load, is rare in populations with lower salinity intake of 50 mg/L per day. In addition, there is evidence that the consumption of salt can be indirectly related to obesity, as well as the increase in type 2 diabetes risk, independent of potential causes that increase the risk of pathology, physical activity, obesity and hypertension [25].

Conclusion

Based on this study, it is concluded that isotonic prayers are consumed with a specific objective and excess sugar and chlorine,

and consequently sodium, our products can be produced as the objective and effect expected not to be exceeded. at consumer prices, all analysts present present values of sugar and soda. Analyzes performed on workstations I2 are more appropriate than I2s and I3s as their theories of soda and sugar should be devoted to the natural ingredients presented in the baby. Porem is less accessible than to the main coast. It is important to note that as concentrations present in the product must be conditions with the description of the root and within the quantity allowed by the legislation, as elucidated in the present work.

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