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RESEARCH OF SODIUM CONTENT IN DIETARY AND NORMAL FOODS MARKETED IN BRAZILIAN SEMI-ARID

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ABSTRACT

Behavior in relation to food consumption has undergone significant change in recent years. The population with chronic disease that has a restriction in food consumption suffers problems both when it is found, the price and the high sodium intake. Thus the objective of this work was to investigate the levels of sodium in dietary soft drinks marketed in a city in the semi-arid state of Piauí. A statistically significant difference was observed in the amount of sodium in diet foods when compared to normal foods $p < 0.05$. Regarding the carbohydrate content, it was observed that the zeros products comply with the legislation demonstrating a reduced content of carbohydrates. It has been found that zero products have a high level of carbohydrates that can cause hypertension in diabetic patients besides kidney problems. In this way it becomes necessary to elaborate public and regulatory policies to reduce sodium levels in zero, light and diet products.

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INTRODUCTION

In Brazil, diet products are high in sodium, difficult to find in festivals, stadiums and the public environment. In addition, it has a higher value in relation to non-dietetic products. This high level of sodium can cause diseases like hypertension and kidney disease. The lack of public and regulatory policies hinders the standardization of these foods.

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Soft drinks have a large annual production, with Brazil occupying the third place in this ranking, producing more than 13 billion liters per year, falling behind only in the US and Mexico. The composition of most of them contains substances such as caffeine, acidulants, dyes, among other elements that can cause various changes in our body, which vary greatly depending on the susceptibility of each individual, and can cause small allergic reactions to ulcer (ABIR, 2011). Consumers are increasingly looking for healthy and innovative products that are safe and of practical use. In the wake of this worldwide trend, the consumption of diet and light products,

used by those who need to maintain restrictive diets or is concerned with aesthetics and in maintaining healthy eating habits, grows. In our country, soft drinks, soups, desserts, frozen ready meals, among other foods with low calories have become mandatory items in the dispensation of many Brazilians (VIEIRA, CORNÉLIO, 2014). Diet and light foods fit as special-purpose foods and are increasingly popular, yet many consumers still have problems differentiating them. The term diet, for example, should be used for foods for nutrient-restricted diets, ie diets with restriction of carbohydrates, fats, proteins and sodium, and controlled-nutrient foods such as weight-control foods (Ordinance 29/98, item 8.1.2 / Brazil 98). Light products are those foods that must have at least 25% less of some caloric component, be it sugar, fat, salt, among others. They are those that present the reduction of any of its components (sugar, fat, protein) with reference to the product of the same type, and has no specific purpose such as diet products (Carvalho; Cornélio, 2007). According to Nobre (2010), the indiscriminate use of these products over the long term can have harmful effects on health. She explains that prolonged use of these may be associated with the onset of diseases, such as cancer and Alzheimer's. In foods that replace sugar with artificial sweeteners, the danger lies in the substances used to give the sweet taste, called sweeteners. In foods where fat is removed, the danger is in the amount of preservatives. It was decided to carry out such research due to the scarcity of studies on this subject and the large number of diabetics consuming diet and light products, since these are rich in sodium, thus favoring the early onset of hypertension and renal disorders. In addition, it seeks to bring more clarification to the population in general, since it is increasingly adept at such products. Therefore, the objective of this work was to investigate the sodium levels of dietary soft drinks marketed in a city in the semi-arid region of Piauí and to compare the information of the normal labels with the diet and light, aiming to establish the main differences between them in nutritional terms as well how to highlight problems related to excessive consumption.

MATERIALS AND METHODS

A cross-sectional, cross-sectional study was carried out in several commercial establishments in the city of Picos, Piaui.
All establishments were previously and properly informed about the procedures, authorizing the implementation of the project. Four student researchers checked for labeling of dietary products and their corresponding non-diet labels. A numerical precision of one digit was used in the presentation of the data, maintaining the original data in the analysis of the labels. The quantitative variables, with Gaussian distribution, were represented by their means and respective standard deviations, and the variables with asymmetric distribution, by their respective medians. The sample was chosen for convenience. All products that generated doubt on the labels and had no corresponding in the non-dietary version were excluded.

Data collection: data were collected by trained observers in supermarkets of city from Picos, Piauí, Brazil, when establishments were available, an occasion during which they were informed about the study and its objectives. This collection was carried out over a period of one year. Data were analyzed through tables, graphs and descriptive statistics. Student's t-test was used to verify association between qualitative variables. The Shapiro Wilk Normality test was used. For the aforementioned test, the assumed level of significance was 5% ($p < 0.05$) and the software used for statistical analysis was Graph Pad Prism version 5.0. The work followed all the norms and ethical rigor of health research in its ethical and methodological aspects, including its Free and Informed Consent Term (TCLE), in accordance with the International and National Guidelines and Norms, especially Resolutions 466 / 12 and complementary from the National Health Council. This work has no conflict of interest.

RESULTS AND DISCUSSION

Figure 1 shows a comparison of the results found in the main normal and zero refrigerants found in some supermarkets in the city of Picos-PI.

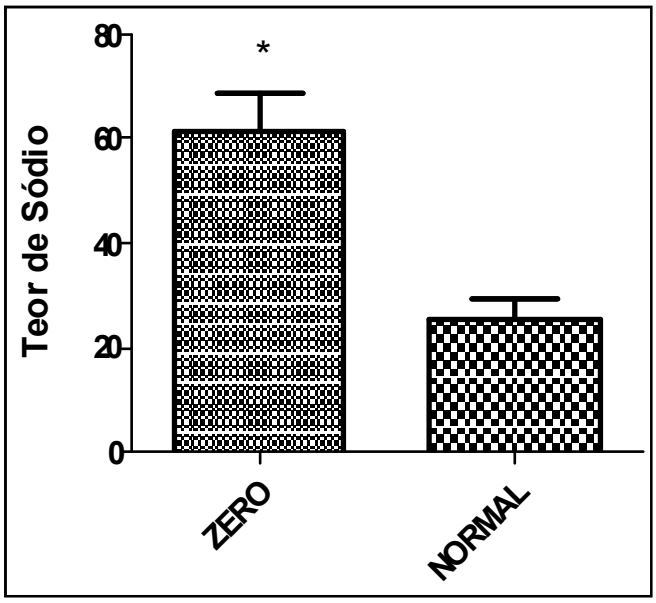

Figure 1. Sodium content in dietary foods P <0.012

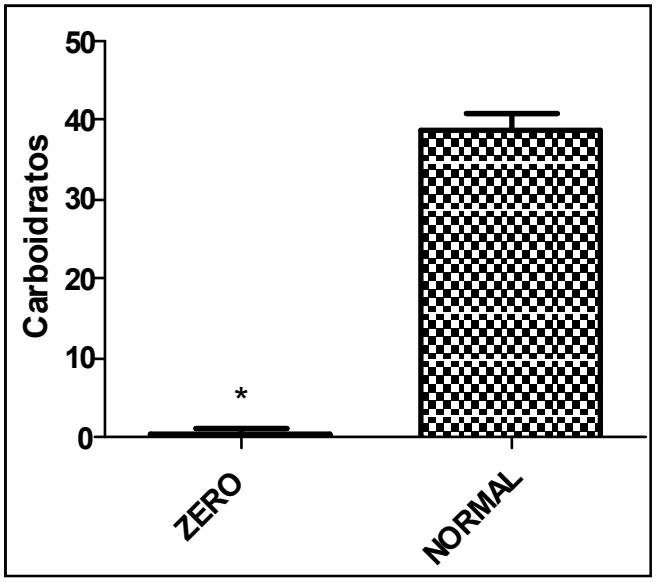

Figure 2. Carbohydratecontent P <0.0001

In view of the above results it can be observed that when comparing the normal refrigerants with the diets / light, these present a statistically significant value in relation to the sodium content when compared with the normal products $P < 0.05$. They may also have a considerable value in relation to the

amount of sodium cyclamate and saccharin, and it can not be affirmed that they do not have their expressed amounts in normal refrigerants. It is also noticed that the normal refrigerants have a higher content of carbohydrates and that both do not have significant amounts of lipids. The high caloric value of soft drinks, due to the concentration of sugars, contributes to obesity. And the additives contained therein, such as acidulants and artificial colorants are substances that can cause health ills, such as cancer, allergic processes, hyperactivity among others (CARVALHO, 2006). According to data from ANVISA (2012), the food groups most consumed by the Brazilian population with higher energy consumption averages (such as filled biscuits, industrialized snacks, pizza and soft drinks) are related to diets with high saturated fats, sugar and salt, reflecting an inadequate feeding pattern, which constitutes a risk factor for the development of chronic noncommunicable diseases (CNCD), such as heart disease, obesity, neoplasias, among others. The drink in the light and diet versions have high rates of sodium, which increases the risk for hypertension and kidney problems. The National Sanitary Surveillance Agency (ANVISA) has determined the reduction of the concentration of two sweeteners in these drinks: saccharin and cyclamate, mainly by the sodium content that these substances add to these soft drinks (WIRTH, 2010).
There is a great deal of evidence linking excessive salt intake to the development of chronic diseases (Who, 2007). It is estimated that between 25 and 55 years of age, a decrease of only 1.3 g in the amount of sodium consumed daily would translate into a reduction of 5 mmHg in systolic blood pressure or 20% in the prevalence of arterial hypertension. In addition, there would also be substantial reductions in mortality from stroke (14%) and coronary heart disease (9%), representing 150,000 lives saved annually worldwide (Dickinson and Havas, 2007).

According to data published in BBC Brazil (2013), anyone who drinks a can of soda per day without being dieting has a risk of developing diabetes 20% higher than those who consume one can or less per month. What's more, for every can of soda an individual drinks each day, the risk of diabetes increases more. With regard to cyclamate, a substance that is approximately 30-40 times sweeter than sucrose and odorless, research has been carried out in which it was concluded that when used as an isolated sweetener it was not carcinogenic. However, there is some evidence that its use when associated with saccharin acts as a cancer or co-carcinogenic promoter and that the use of the cyclamate-saccharin mixture may be associated with an increased risk of bladder cancer (ANVISA, 2009). According to a survey conducted by ANVISA (2012), the data show that there is a possibility of a reduction in the amount of sodium in all food categories evaluated (among which are soft drinks), since some companies produce similar foods with lower levels of these shows that there are technological conditions for the reduction of this nutrient in food. Population studies show that in the United States approximately 1/3 of adults are obese and one in six children and adolescents are overweight. In Brazil, research data show an increase in the prevalence of overweight among children and adolescents (NOGUEIRA; SICHIRI, 2009), and studies have related the consumption of soft drinks not only to weight gain, but also to the increase of dental caries and to low calcium-containing foods, with subsequent increase in osteoporosis and diabetes, which are still controversy (CARVALHO, 2006).

Conclusion

In view of the above, it is evident that diet and light products have a statistically higher sodium content when compared to normal ones, and they also present a significant value for saccharin and sodium cyclamate. The normal soft drinks in turn, have a higher content of sugars and should also be avoided. Therefore, consumers should pay attention to this fact, because lack of information may be consuming products that instead of bringing improvements in health can lead to even more problems. There is a need to carry out awareness campaigns on the indiscriminate use of diet and light products, in order to alert the population to the importance of reading food labels carefully, as well as the possible risks they may cause. In addition, it is important to remember that many consumers of diet products are diabetic and high in sodium because they contribute to the early onset of hypertension from kidney disease. The Brazilian government should make a change in the legislation to regulate the maximum levels of sodium in each product and reduce the risk of hypertension in the Brazilian population.

REFERÊNCIAS

ABIR, Associação Brasileira das Indústrias de Refrigerantes e de Bebidas Não Alcoólicas; Dados de Mercado, 2011. Disponível em: <http://www.abir.gov.br>. Acessoem: 09 de agosto de 2014.BBC Brasil,Pesquisa diz que um refrigerante por dia aumenta risco de diabetes, 2013. Disponível em: http://www.bbc.co.uk/portuguese/ noticias/2013/04/130425_refrigerante_diabetes_ru.shtmlA cesso em: 11 de agosto de 2014.

Agência Nacional de Vigilância Sanitária.Informe Técnico n°. 50/2012

Agência Nacional de Vigilância Sanitária.Informe Técnico nº. 40, de 2 de junho de 2009

BRASIL, Portaria nº29 de 13 de janeiro de 1998. Aprova o regulamento técnico sobre alimentos para fins especiais. Diário Oficial da União 1998; 13 jan.

BRASIL, Report of a WHO forum and technical meeting, 2006; Paris, France. Reducingsaltintake in populations. Geneva: WHO; 2007.

CARVALHO, P. V. A.; CORNÉLIO, A. R.. Produtos light e diet: o direito de informação ao consumidor. In: Âmbito Jurídico, Rio Grande, X, n. 45, set 2007. De CARVALHO, F. A. C. O livro negro do açúcar. Rio de Janeiro: Auto-edição, 2006.

DICKINSON, B.D.; HAVAS, S. Reducing the populationburden of cardiovascular disease by reducing sodium intake. *Arch Int Med.* 2007;167(14):1460-8. DOI: 10.1001/archinte.167.14.1460.

Disponível em: http://www.who.int/dietphysicalactivity/ Salt_Report_VC_april07.pdf. Acesso em 10 de agosto de 2014.

Esclarecimentos sobre o uso do edulcorante ciclamato em alimentos. Disponível em: http://www.anvisa.gov.br/ alimentos/informes/40_020609.htm Acesso em: 08 de agosto de 14.

NOBRE, T. Diet, light ou zero? Caderno Ciência & Saúde do Jornal O Povo do dia 16/05/2010. Disponível em:http://www.aridesa.com.br/servicos/click_professor/al exandre_lima/diet_light_zero.doc Acesso em: 08 de agosto de 2014.

NOGUEIRA, F. A. M; SCHIERI, R. Associação entre consumo de refrigerantes, sucos e leite, com o índice de

massa corporal em escolares da rede pública de Niterói, Rio de Janeiro, Brasil. *Cad. Saúde Públic.* v.25, no.12, p.2715-2724, 2009.

OLIVEIRA, A. C. S. A.; SANTOS, E. P.; SILVA, M. S.; VIEIRA, T. P. R.; SILVA, S. M. O impacto do consumo de refrigerantes na saúde de escolares do colégio Gissoni. Revista Eletrônica Novo Enfoque, ano 2011, v. 12, n. 12, p. 68 – 79.

ROSSI, R; VALLINOT, M. Efeitos físicos e emocionais do refrigerante. Saúde, Terra, 2010. Disponível em: <Efeitos+fisicos+e+emocionais+do+refrigerante.html>. Acesso em: 10 de agosto de 2014.

Teor de Sódio dos Alimentos Processados. Disponível em: http://ajinomotofi.com.br/docs/TEOR%20DE%20SODIO%20DOS%20ALIMENTOS%20PROCESSADOS_Anvisa.pdf. Acesso em: 08 de agosto de 2014.

VIEIRA, A. C. P.; CORNÉLIO, A. R. Produtos light e diet: o direito de informação ao consumidor. In: Âmbito Jurídico, Rio Grande, X, n. 45, set 2007. Disponível em: http://www.ambito-juridico.com.br/site/index.php?n_link=revista_artigos_leitura&artigo_id=2212&revista_caderno=10. Acesso em set 2015.

WIRTH, M. Consumo de sucos e refrigerantes: um risco maior para crianças e adolescentes. Sistema Integrado de informação em Saúde. In matéria, 2010.

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