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Abstract

Is There an Association between Sodium-Based Additives and Total Sodium Content of Foods? †

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† Presented at the 14th European Nutrition Conference FENS 2023, Belgrade, Serbia, 14–17 November 2023.

Abstract: Background and objectives: Excessive sodium intake is a major public health issue. Despite the large use of sodium-based additives, their contribution to sodium content is unknown. This work aims to study the association between the use of sodium-based additives and the sodium content of foods sold by a market-leading Portuguese food retail company. Methods: White-label pre-packaged foods and fresh products were included in this study. The salt content of pre-packaged foods was supplied by the company and converted to sodium. The sodium content of non-industrially packaged foods was estimated through food composition tables. Foods were categorized based on the World Health Organization sodium benchmarks. The sodium-based additives on the label's ingredient list were identified according to Regulation (EU) No. 1129/2011 and counted. Non-parametric tests ($n > 5$) were used to test the median sodium content (mg/100 g) (minimum, maximum) according to the use of sodium-based additives. Results: A rising sodium content was observed from 0 [56.7 mg (0, 39880)] to $\geq$ 3 additives [520 mg (60, 2080)] ($n = 2451$, $p < 0.001$). A total of 12 categories and 13 subcategories were analyzed. The use of sodium-based additives was associated with higher sodium content for the following categories (a) and subcategories (b): Confectionary (a) ($p < 0.001$), Chocolates/candies (b) ($p < 0.001$), Savory snacks (a) ($p < 0.001$), Salted biscuits (b) ($p = 0.027$), Fresh (a) and Processed meat/fish (a) ($p < 0.001$), Processed fruit/vegetables/legumes (a) ($p < 0.001$), Canned vegetables/legumes (b) ($p < 0.001$), Ices (a) ($p = 0.006$), Ready meals (a) ($p = 0.030$), Composite ready meals (b) ($p = 0.001$), Cookies (b) ($p = 0.007$), Cakes (b) ($p = 0.022$). The use of sodium-based additives was associated with lower sodium content for Beverages (a) ($p = 0.002$), Fish (heat treated) (b) ($p = 0.020$), and Pastries (b) ($p = 0.045$). Non-significant differences were observed for 4 categories and 5 subcategories. Discussion: A positive association between the use of sodium-based additives and the sodium content was observed. Inconsistent results were found across categories, suggesting the need for a deeper analysis of the foods included in each category or subcategory.

Keywords: sodium; additives; food categories

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Citation: Almeida, C.; Lopes, E.; Padrão, P. Is There an Association between Sodium-Based Additives and Total Sodium Content of Foods? *Proceedings* **2023**, *91*, 91. https://doi.org/10.3390/proceedings2023091091

Academic Editors: Sladjana Sobajic and Philip Calder

Published: 28 November 2023

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Author Contributions: Conceptualization and methodology: C.A.; investigation and data collection: C.A. and E.L.; Writing – original draft: C.A. and E.L.; Supervision: P.P.; Writing – review & editing: P.P. All authors have read and agreed to the published version of the manuscript.

Funding: This study was financed through national funding from the Foundation for Science and Technology—FCT (Portuguese Ministry of Science, Technology and Higher Education), under the projects UIDB/04750/2020 and LA/P/0064/2020. Individual PhD grant attributed to Carla Almeida (2020.08208.BD) was funded by FCT and the "Programa Operacional Regional Norte" (NORTE 2020/FSE). The funders had no role in the design, analysis or writing of this paper. A national food retail company provided the data used for this study but the authors state that they have no financial

or other conflicts of interest. The opinions expressed in this manuscript are those of the authors and do not necessarily represent the position or policy of the food retail company.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Databases used in the manuscript will not be made available due to a confidentiality policy of the food retail company that provided data.

Conflicts of Interest: The authors declare no conflict of interest.

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