

Corn as a relevant source of dietary Nickel

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PERVEMAC II: Project (MAC/1.1a/049)

INTRODUCTION

- Nickel (Ni) is a common element present in the Earth's crust. Its presence in food is a hazard that arises from natural and anthropogenic sources. Cereals have been shown to be a relevant Ni food source (EFSA, 2020)
- Currently, there are no regulations on maximum Ni levels in foodstuffs, not even in the EU
- A BMDL₁₀ of 1.3 mg Ni/kg bw/day was selected through dose-response modelling as a reference point for the establishment of the TDI (13 µg/kg bw) (EFSA, 2020)
- Grains and grain-based products have been identified as the most important contributor to the mean lower bound chronic dietary Ni exposure in Europe (EFSA, 2020).

OBJECTIVES

- To determine the Ni content in corn grains consumed in the Atlantic archipelagos of Cape Verde (Non-EU) and Canary Islands (EU) to estimate Ni dietary exposure from corn consumption and to characterize the risks following oral ingestion.

Canary Islands



Cape Verde



CONCLUSIONS

- This study contributes with information on the potential presence of Ni in a food group other than drinking water.
- It is recommended to avoid the use of corn with higher levels of Ni. In addition, it is recommended to remove the husk from the analyzed grains for later use in flours and derivatives.
- Total diet Ni exposure assessments should be promoted to gather data across countries and age groups, and Risk Managers should develop maximum limits for those food sources of Ni in order to protect consumer health, especially in Ni-sensitized individuals where TDI may not be sufficiently protective.

METHOD



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RESULTS

Table 2. Mean concentration, standard deviation (SD), min and maximum levels and dietary intake assessment (considering: 100g/day, 68,48 kg of body weight)

	Canary Islands	Cape Verde
Mean (mg/kg) ± SD	0.26 ± 0.40	0.15 ± 0.08
Min – Max	0.05 – 3.76	0.03 – 0.28
EDI (µg/day)	26	15
Contribution (%)	3.3	1.9

Table 1. Corn samples and origin

No.	Origin
15	Cape Verde
81	Canary Islands

REFERENCES



EFSA, 2020

Ni mean content (mg/kg)

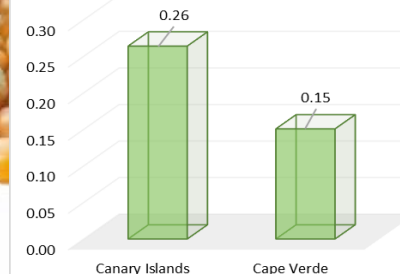


Figure 1. Ni mean content by origin