



## PRESS RELEASE

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The scientific journal *Nutrients* publishes the study 'Iron Intake and Dietary Sources in the Spanish Population: Findings from the ANIBES Study'

## The ANIBES Study analyzes intake and dietary sources of iron in a representative sample of the Spanish population

- With regards to age, higher iron intakes were observed in adolescents (11.4 mg/day) and children (11.0 mg/day) than in adults and the elderly, which were 10.4 mg/day and 10.2 mg/day in each case
- The food and beverages groups with the highest mean contribution to iron dietary intake were cereals and grains (27.4% in males and 26.7% in females), meat and meat products (22.7% in males and 19.8% in females) and vegetables group (10.3% and 12.4% of iron intake in males and females respectively)
- The study observed that North Central region of Spain and Northeast presented higher daily iron intakes, while the Center of the peninsula, Canary Islands and the South region had the lowest iron intakes

The scientific journal [Nutrients](#) has recently published the research '[Iron Intake and Dietary Sources in the Spanish Population: Findings from the ANIBES Study](#)'. The purpose of this pioneer study, which has been coordinated by the Spanish Nutrition Foundation (FEN) was to evaluate dietary intakes of iron in the Spanish population according to age and gender, and to examine the contribution from different food and beverages groups and subgroups as dietary source of this mineral.

Furthermore, the analysis assessed the prevalence of adequacy for iron intakes (% population above 80% Recommended Dietary Intakes) according to the Dietary Reference Intakes by the European Food Safety Authority (EFSA, 2015) and iron daily Recommended Intakes for the Spanish Population as reviewed by Moreiras O. et al in 2015.

In this sense, the proportion of adequacy for total iron intake among females in the ANIBES population was 17.0% and 27.3% according to the Spanish and EFSA references respectively, and 57.3% and 77.2% respectively for males.

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### Iron intake (mg/day) and prevalence of adequacy (% population above 80 % RDI\*) in ANIBES population by age group and reporting according to the Spanish and EFSA references, 2015

Age Group	Iron (mg/Day)	% Above 80 % RDI Moreiras O. et al, 2015 (Spain)	% Above 80 % RDI EFSA, 2015
<b>Children</b>			
Total n= 213	11.0 (9.2 - 12.8)	40.9	77.9 ###
Plausible n= 120	12.2*** (10.4 - 14.0)	54.2	94.2 ###
Non-plausible n= 93	9.2 (8.0 - 11.1)	23.7	57.0 ##
<b>Adolescents</b>			
Total n= 211	11.4 (9.1 - 13.4)	15.2	73.0 ###
Plausible n= 76	13.3*** (11.6 - 15.4)	27.6	90.8 ###
Non-plausible n= 135	10.0 (8.1 - 11.8)	8.2	63.0 ###
<b>Adults</b>			
Total n= 1,655	10.4 (8.4 - 12.9)	36.9	47.9 ###
Plausible n= 433	13.0*** (11.0 - 15.6)	47.8	63.3 ##
Non-plausible n= 1,222	9.6 (7.8 - 11.8)	33.0	42.5 ###
<b>Elderly</b>			
Total n= 206	10.2 (7.9 - 12.6)	52.9	68.0 ###
Plausible n= 45	12.7*** (10.9 - 17.2)	88.9	100.0 ###
Non-plausible n= 161	9.5 (7.5 - 11.5)	42.9	59.0 ###

\* RDI: Recommended Dietary Intakes.

Values are median (interquartile range) per group.

\*\*\* p < 0.001 difference No misreporting vs. Misreporting (Mann-Whitney's U test)

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According to **Prof. Gregorio Varela-Moreiras**, Chairman of the Spanish Nutrition Foundation (FEN), Director of the Nutrition and Food Sciences Research Group (CEUNUT) and Professor of Nutrition and Bromatology at CEU San Pablo University of Madrid, "many dietary factors can hamper or promote absorption of this mineral, but the most important determinant is systemic iron need: more is absorbed in a state of iron deficiency and less is absorbed when mineral depots are replete."

With respect to mechanisms of absorption, there are two kinds of iron in the usual diet: haem and non-haem iron. Haem iron is between 2 and 6 times more bioavailable from the diet than non-haem iron, "being meat and meat products group the main source in the diet. In this regard, it is also important to consider a number of recommendations by public health authorities that designate that meat and meat products intake should be limited. As for non-haem iron, cereals constitute the main source, followed by vegetables, fruits and pulses, although we must bear in mind that its bioavailability might be low in this case", added Prof. Varela-Moreiras.

For this reason, "detailed information on dietary iron sources is essential to better understand the strengths and weaknesses of the Spanish diet quality and to identify vulnerable population groups", he added. In this respect, the study states that, according to the World Health Organization (WHO), anaemia prevalence in the Spanish population ranges from 14% to 18% in children and in women of reproductive age, respectively.

### Contribution of food and beverages to iron intake

Regarding contribution of food and beverages to iron intake, the groups with the highest mean contribution to iron dietary intake in both males and females were firstly cereals and grains (27.4% in males and 26.7% in females), followed by meat and meat products group (22.7% in males and 19.8% in females). In both cases, intakes were significantly higher in the male population. Thirdly, vegetables group accounted for a 10.3% and 12.4% of iron intakes in males and females respectively, being significantly higher in females. Together, these three previous food groups contributed to 60% or more of iron intakes of the ANIBES Study population.

Lastly, according to iron intake by geographical distribution in Spain, "the study observed that North Central region of Spain and Northeast presented higher daily iron intakes, while the Center of the peninsula, Canary Islands and the South region had the lowest iron intakes", concluded Prof. Varela-Moreiras.

Samaniego-Vaesken ML, Partearroyo T, Olza J, Aranceta-Bartrina J, Gil A, González-Gross M, Ortega RM, Serra-Majem LI, Varela-Moreiras G. Iron Intake and Dietary Sources in the Spanish Population: Findings from the ANIBES Study. *Nutrients*, 2017;9:203; doi:10.3390/nu9030203.

With the participation of:



Spanish Nutrition Society (SEN)



Spanish Society of Community Nutrition (SENC)



Spanish Foundation for Nutritional Research (FIN)



Nutrition Studies Association (ASEN)



### Scientific Committee of the ANIBES Study

- **Prof. Javier Aranceta-Bartrina MD, PhD**, Chairman of the Scientific Committee of the Spanish Society of Community Nutrition (SENC), Clinical Director of the Spanish Foundation for Nutritional Research (FIN) and Professor of Community Nutrition at the University of Navarra
- **Prof. Ángel Gil, PhD**, Chairman of the Iberoamerican Nutrition Foundation (FINUT), Director of the BioNit Scientific Group and Professor of Biochemistry and Molecular Biology at the University of Granada
- **Prof. Marcela González-Gross, PhD**, Vice President of the Spanish Nutrition Society (SEÑ), Head of the imFine Research Group and Professor of Sports Nutrition and Exercise Physiology at the Technical University of Madrid
- **Prof. Rosa M<sup>a</sup> Ortega, PhD**, Director of the VALORNUT Research Group and Professor of Nutrition at the Complutense University of Madrid
- **Prof. Lluís Serra-Majem, MD, PhD**, Chairman of the Spanish Foundation for Nutritional Research (FIN), Chairman of the Spanish Nutrition and Food Sciences Academy (AEN), and Professor of Preventive Medicine and Public Health at the University of Las Palmas de Gran Canaria
- **Prof. Gregorio Varela-Moreiras PhD**, Chairman of the Spanish Nutrition Foundation (FEN), Director of the Nutrition and Food Sciences Research Group (CEUNUT) and Professor of Nutrition and Bromatology at CEU San Pablo University of Madrid

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### Technical specifications of the ANIBES Study

**Design:** Representative sample of the resident population in Spain (excluding Ceuta and Melilla)

**Sample:** Individuals aged between 9 and 75 years old who live in municipalities with more than 2,000 inhabitants

**Universe:** 37 million inhabitants

**Random sample plus boost:** 2,285 participants\*

\*Boost in the sample size was considered in order to obtain a correct representation

The final protocol of the ANIBES scientific study was previously approved by the Clinical Ethics Committee of the Autonomous Region of Madrid (Spain).

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