

## EDITORIAL

**Stimulating drinks: Neither energy drinks nor for teens****Bebidas estimulantes: ni bebidas energéticas ni para adolescentes**

Rosaura Leis<sup>a,b,c</sup> y Comité de Nutrición, Lactancia Materna de la Asociación Española de Pediatría (AEP)

<sup>a</sup> Comité de Nutrición y Lactancia Materna de la Asociación Española de Pediatría (AEP), Madrid, Spain

<sup>b</sup> Universidad de Santiago de Compostela (USC). Unidad de Gastroenterología, Hepatología y Nutrición Pediátrica del Hospital Clínico Universitario de Santiago de Compostela, Santiago de Compostela, A Coruña, Spain

<sup>c</sup> IP del GI Nutrición Pediátrica del Instituto de Investigación Sanitaria de Santiago de Compostela (IDIS)-ISCIII. GI Nutrición, Crecimiento y Desarrollo Humano de Galicia (USC). CiberObn, Santiago de Compostela, A Coruña, Spain

The term “energy drinks” is a misnomer, and these beverages should actually be known as “stimulant drinks” given their high caffeine content. In Spain, there is no official definition for these products, but “energy drink” is a term usually associated with nonalcoholic beverages with a high caffeine and sugar content and other ingredients such as taurine, L-carnitine, glucuronolactone, ginkgo, guarana, ginseng and some B vitamins.<sup>1</sup>

The consumption of these products has increased significantly in recent years, and they have become a common drink among teenagers, and at increasingly younger ages. They can be found in all kinds of stores, with no restrictions to their purchase, and are consumed freely in social occasions and/or with friends. Their popularity is growing thanks to major advertising campaigns characterized by the use of striking images and colors, which are also used in the packaging design, and the participation of energy drink brands in sporting or leisure events frequented by teenagers, sponsoring or promoting their consumption. However, adolescents are a vulnerable population frequently unaware of the sig-

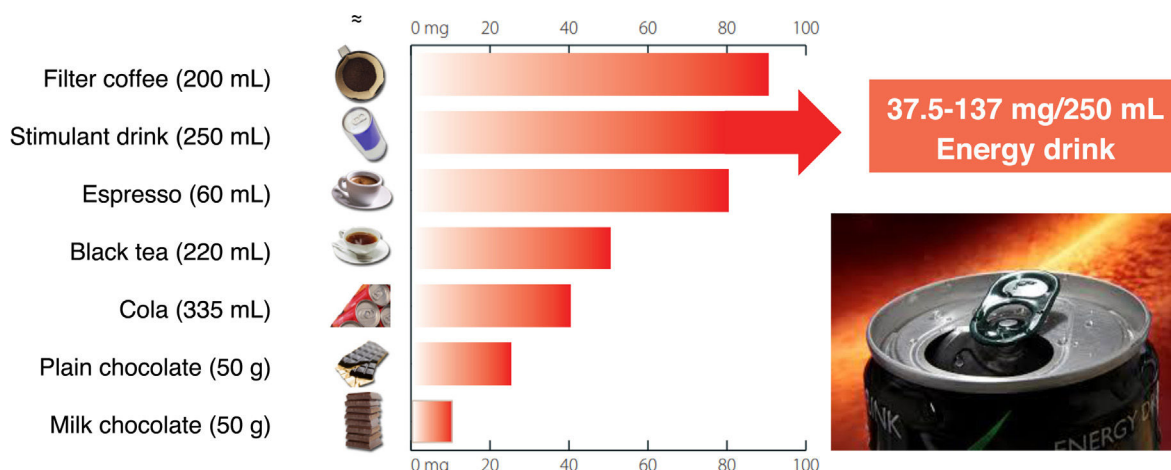
nificant negative impact that these products can have on their health in the short, medium and long term.

The main stimulant in these beverages and responsible for their deleterious effects on health is caffeine, present in concentrations ranging from 15 to 55 mg per 100 mL, without taking into account other ingredients, such as guarana, that also contain caffeine in amounts not disclosed on the label. The European Food Safety Authority (EFSA) recommends a maximum caffeine intake of 3 mg/kg of body weight per day for children and adolescents, which means that a 500 mL can with a caffeine content of 32 mg per 100 mL, the most common concentration on the market, delivers the maximum recommended cumulative daily dose (Fig. 1). It is worth noting that this maximum dose is often consumed in a very short time frame, given the large size of the containers, which magnifies its effects. Moreover, many of these beverages also contain large amounts of sugar. A 500 mL can may contain between 50 and 60 g of free sugars, well in excess of the 5% of the total energy intake recommended by the World Health Organization (WHO).<sup>1</sup> However, there are numerous “light” or “zero” formulations on the market in line with the current trend of replacing sugar with calorie-free sweeteners, which may lead consumers to believe that they are consuming a beverage that does not pose any risks to their health.

DOI of original article:

<https://doi.org/10.1016/j.anpedi.2025.503795>

E-mail address: [mariorosaura.leis@usc.es](mailto:mariorosaura.leis@usc.es)



Adapted from: EFSA. Europe EU. EFSA explains risk assessment: Caffeine. [Online] Italy, 2015 [accessed January 30, 2025]. Available at: [https://www.efsa.europa.eu/sites/default/files/corporate\\_publications/files/efsaexplainscaffeine150527.pdf3K](https://www.efsa.europa.eu/sites/default/files/corporate_publications/files/efsaexplainscaffeine150527.pdf3K)

Figure 1 Caffeine content in different food products.

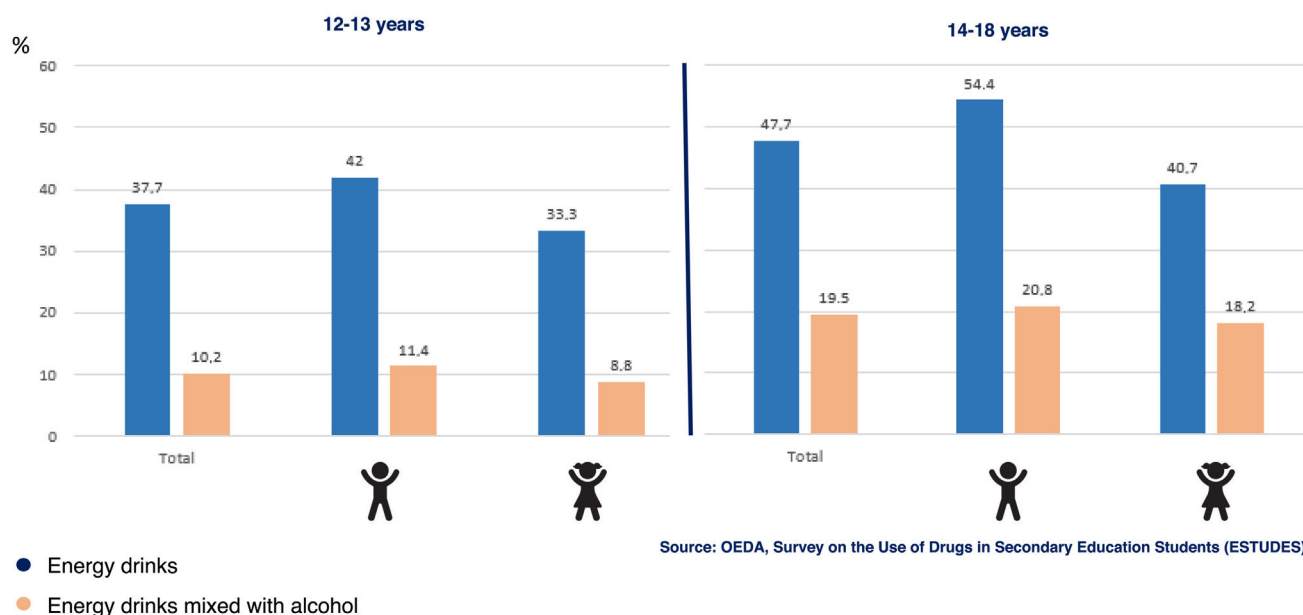
Recent studies have evinced that consumption of these drinks is associated not only with symptoms and signs such as nervousness, insomnia, irritability, emotional difficulties, severe stress or anxiety, attributable to the stimulant effect of caffeine on the central nervous system, but also with cardiovascular, metabolic and gastrointestinal disorders, overweight and obesity, addiction, poor oral health, unhealthy lifestyle habits and decreased wellbeing.<sup>1,2</sup>

Despite all this, their consumption continues to increase alarmingly in younger age groups. As early as 2013, the EFSA published its first report on the consumption of “energy” drinks,<sup>3</sup> highlighting that 68% of respondents aged 10–18 years consumed them, as did 18% children aged 3–10 years. In Spain, the 2023 report of the Survey on the Use of Drugs in Secondary Education Students (ESTUDES)<sup>4,5</sup> detailed that 37.7% of adolescents aged 12–13 years and 47.7% of adolescents aged 14–18 years had consumed stimulant drinks in the past 30 days, with the highest proportion found in those aged 18 years and greater consumption in male compared to female respondents in every age group. Another concerning finding was that these beverages were frequently consumed in combination with alcohol,<sup>4,5</sup> curbing the sensation of being inebriated and facilitating a greater consumption of alcohol (Fig. 2). This survey also found that the consumption of energy drinks in adolescents aged 14–18 is associated with the use of other toxic substances, such as tobacco, cocaine, hypnotics, cannabis or ecstasy, especially when mixed with alcohol. It is worth noting that 72.5% of those who had recently consumed these beverages had also consumed alcohol.<sup>4</sup> There is also evidence of an association with vandalism and violent behaviors, risk behaviors such as binge drinking or unsafe sex, and poor academic performance, and other negative outcomes.<sup>2</sup>

In order to establish adequate prevention and intervention strategies, it is important to consider the reasons for their consumption and whether or not there are protective factors that can prevent it. In this regard, a systematic review published in 2024<sup>2</sup> found that the main reasons for consumption were taste and energy-seeking,

although social/peer influences, performance enhancement, curiosity, price and advertising also played a role.<sup>2</sup> In addition, youth who went partying at least two nights a week, returned home at 3 a.m. or later and/or had a greater weekly allowance were more likely to consume these beverages, alone or mixed with alcohol.<sup>4</sup> On the other hand, the ESTUDES 2023 survey<sup>4</sup> found that some hobbies, like reading or playing an instrument, were associated with lower consumption and could act as protective factors.

Despite all the known risks, Spain still lacks specific regulations for these beverages, which fall under Regulation 650/2011 for soft drinks, for which the sole restriction is not to exceed an alcohol content of 0.5%.<sup>1</sup> As a result, there is no specific definition to make it possible to establish the ingredients that these beverages can contain or their allowed amounts. In recent years, some autonomous communities have taken the first steps towards regulating these products. The government of the Canary Islands has introduced the first official designation of “energy drinks”, based on a caffeine concentration of more than 150 mg/L, and a new reduced rate of 5% IGIC (Canary Islands General Indirect Tax) on these products. Galicia has introduced a bill that establishes a definition according to the caffeine contents and prohibiting their sale to individuals aged less than 18 years and their presence at events for children and adolescents. Other autonomous communities have expressed an interest in joining this initiative. At the European level, Regulation (EU) No 1169/2011 states that the labeling of beverages that contain caffeine in a proportion in excess of 150 mg/L must include its concentration expressed as mg/100 mL along with the legend “High caffeine content. Not recommended for children or pregnant or breast-feeding women.”<sup>1</sup> However, it would be preferable to directly address adolescents in the warning, as they are the main consumers of these products. In addition, some European countries already restrict the sale of these beverages to specific age groups and specific types of businesses or retail points, and others have started with regulatory strategies of smaller scope.<sup>1,2</sup>



**Figure 2** Consumption of energy drinks among Spanish adolescents. ESTUDES 2023 study.

In conclusion, the misleadingly called “energy drinks” should be called “stimulant drinks”. They are widely consumed by adolescents, posing important risks to their health. Thus, it is important to inform the general population, children, adolescents and their families of the deleterious effects of their consumption and to improve existing legislation to ensure adequate regulation of their labeling, advertising, sale and consumption.

## References

1. Rubio C, Cámara M, Giner RM, González MJ, López E, Morales FJ, et al., Comité Científico AESAN. Informe del Comité Científico de la Agencia Española de Seguridad Alimentaria y Nutrición (AESAN) sobre los riesgos asociados al consumo de bebidas energéticas. *Revista del Comité Científico de la AESAN*. 2021;33:151–210.
2. Ajibo C, Van Griethuysen A, Visram S, Lake AA. Consumption of energy drinks by children and young people: a systematic review examining evidence of physical effects and consumer attitudes. *Public Health*. 2024;227:274–81.
3. European Food Safety Authority [Internet]. “Energy” drinks report. [Accessed 8 December 2024]. Available from: <https://www.efsa.europa.eu/en/press/news/130306>.
4. Observatorio Español de las Drogas y las Adicciones. Encuesta sobre uso de drogas en Enseñanzas Secundarias en España. ESTUDES 2023. Available from: <https://pnsd.sanidad.gob.es/profesionales/sistemasInformacion/sistemaInformacion/encuestas.ESTUDES.htm>.
5. Observatorio Español de las Drogas y las Adicciones. Estudio piloto ESTUDES 2023 12 Y 13 años. Encuesta piloto sobre uso de drogas y adicciones en estudiantes de enseñanzas secundarias de 12 y 13 años de 1º y 2º ESO en España. Delegación del Gobierno para el Plan Nacional sobre Drogas, 2023.