



Letter to the Editor

Barttin in English, and in Spanish?

Barttin en inglés, ¿y en español?

Dear Editor,

Between June 1996 and October 1997, Simon et al., using molecular genetic techniques, located three genes whose mutations give rise to the first three known variants of Bartter syndrome. The proteins encoded by these genes are the bumetanide- and furosemide-sensitive cotransporter NKCC2 (Bartter syndrome type I), the ATP-sensitive potassium channel ROMK that recycles potassium into the tubular lumen (Bartter syndrome type II) and the renal chloride channel CLC-Kb that extracts Cl⁻ on the basolateral side of the cell (Bartter syndrome type III). In 1995, Landau et al. described five children from a large consanguineous Bedouin family with Bartter syndrome associated with sensorineural deafness¹; this association was termed type IV Bartter syndrome. In 2011, Birkenhäger et al. described ten families with this condition with seven different mutations in a newly identified gene: the BSND gene. The protein encoded by this gene was named *barttin* after the American endocrinologist Frederic Bartter (1914–1984), discoverer of the inappropriate ADH secretion syndrome that today bears his name. The *barttin* protein colocalizes with CLC-Ka and CLC-Kb channels in the basolateral membrane of the renal tubules of the thin and thick ascending branches of the loop of Henle and in cells of the vascular stria of the inner ear,^{2,3} and functions as an activator of CLC-K chloride channels. The consequence of homozygous mutations in the BSND gene is that the Cl⁻ ion cannot leave the cell and cannot be reabsorbed into the renal medulla.

When writing or publishing about Bartter's syndrome in Spanish, it is logical that the nephrologist hesitates or have doubts when referring to this protein. Given our current overwhelming exposure to English-language publications, the first impulse - as can be seen in numerous articles published in Spanish - is to keep the English spelling and also write 'barttin' (or even to capitalize 'Barttin') in Spanish. Since *barttin* is a protein, however, Spanish usage would append the ending

-ina and a lower case, since it is now a common noun of from a proper name, and not a proper noun.

What about the double t in Spanish? Although it would not be entirely incorrect to keep it, the truth is that in our tradition of scientific nomenclature it is customary to simplify it: *bartina* is therefore, in our opinion, the preferable form in Spanish. Many examples can be exposed by way of analogy in defense of this simplification of the double t: *ataque* (attack), *atención* (attention), *atracción* (attraction), *comité* (committee), *gueto* (ghetto), *glottis* (glottis), *materia* (matter), *pipette* (pipette), *postraumático* (posttraumatic), *psittacosis* (psittacosis), *sagital* (sagittal), *espaguetis* (spaghetti), *tatuaje* (tattoo). The fact that in this case the term derives from a proper name is no obstacle to simplifying the double consonant: the unit of power in the international system is called 'vatio' in Spanish (with a single t) although it derives from the surname of the Scottish inventor James Watt; *boicot* (boycott) takes its name from the English land agent Charles C. Boycott; and the chemical element that takes its name from the Swedish town of Ytterby is written in English as ytterbium (with two t's), whereas in Spanish we call it 'iterbio' (with one t). The same simplification from English to Spanish applies to the following toponyms, which are in fact proper nouns: the Indian city of Calcutta (in Spanish, *Calcuta*, with only one t), the Dutch city of Rotterdam (in Spanish, *Róterdam* or *Róterdam*, with only one t) and the capital of Malta, Valletta in English (but *La Valeta* in Spanish, also with only one t).

This key orthographic difference between the Spanish and English languages is explained by the fact that our orthography is above all phonetic (we write words to reflect the way they are pronounced), while English is above all etymological (they write words to reflect the original spelling in their source language). Thus, they write *hypothalamus* and *hipocampus* (the former with y and a single p, the latter with i and double p) to reflect that these formants come from different Greek words, whereas we write '*hipotálamo*' and '*hipocampo*' the same because we pronounce both formants the same.

In short, then, *Barttin* gene mutations cause Bartter syndrome type IV in English, but *Las* mutaciones del gen de la *bartina* causan el síndrome de Bartter de tipo IV in Spanish,

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with a single *t* in 'bartina', but with many more prepositions and articles. Each language has its own way of expressing the world around us: this is the linguistic diversity of our planet, which, like its biodiversity, is worth nurturing.

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