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Letter to the Editor: About bovine β-casofensin genetic variants—A comment on Bruno et al. (2017)

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Bruno et al. (2017) presented an interesting study on the genetic variants of β-casofensin, a bioactive peptide corresponding to bovine β-casein A^2 f94–123, with promising effects on intestinal health (Plaisancié et al., 2013, 2015). However, we have to underline that A^1 variant differs from A^2 by only a single amino acid (Pro_{67} in A^2 vs. His_{67} in A^1). This substitution is responsible for the scientific and commercial debate on "A2 milk," which involves different genetic variants (Caroli et al., 2009).

Thus, no difference exists between the A^2 and A^1 variants within the β-casofensin sequence. The nomenclature on milk protein variants is precise and updated, based on a wide literature on the subject. Reviews are available on milk protein variant nomenclature, sequences, and effects (e.g., Formaggioni et al., 1999; Farrell et al., 2004; Caroli et al., 2009). Bruno et al. (2017) refer to a substitution Glu_{117} versus Gln_{117} occurring in variants A^1 and G. This substitution was described by Lebrun et al. (1995) in a proteomic study carried out on commercial casein but was not referred to as a genetic variant. Senocq et al. (2002) reported a substitution from Glu to Gln within the f114–169 sequence. This variant, which also differs from A^2 by 2 residues at positions 72 and 93, was named H^2 (Farrell et al., 2004).

Within β-casofensin, genetic differences in A^3 (residue 106) and B (residue 122) variants were properly accounted for by Bruno et al. (2017). Another interesting variant to be investigated is β-casein I, which differs from A^2 by a Met_{93} to Leu_{93} substitution (Caroli et al., 2009). An intriguing question could be whether the cleavage site that results in β-casofensin could be affected by this exchange.

In conclusion, the genetic polymorphism of bovine β-casein remains an open matter. Further efforts occur to understand and exploit it better without forgetting the existing nomenclature.

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