Letter to the Editor: Vaccenic and Rumenic Acids, A Distinct Feature of Ruminant Fats*

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The letter of Ellen and Elgersma (2004) on the use of the term “n-7 fatty acids” in place of *cis*-9, *trans*-11 18:2 and *trans*-11 18:1 acids, or their trivial names rumenic acid and vaccenic acid is an excellent opportunity to review both the origin of vaccenic and rumenic acids and their nomenclature. The name “vaccenic acid” was derived from the Latin *vacca* (cow), and this fatty acid was discovered in 1928 in animal fats and butter (Bertram, 1928). Vaccenic acid is the main *trans* fatty acid isomer present in milk fat, and it is formed with conjugated linoleic acid (CLA, *cis*-9, *trans*-11 18:2 acid) by biohydrogenation of dietary polyunsaturated fatty acids in the rumen (Bauman and Griinari, 2003). It was shown that mammals could partially convert vaccenic acid into *cis*-9, *trans*-11 18:2 acid, a CLA isomer. Recently, the name “rumenic acid” has been proposed as a common name for this naturally occurring CLA isomer (Kramer et al., 1998).

Ellen and Elgersma (2004) proposed to use “n-7 fatty acids” for both vaccenic and rumenic acid instead of CLA or *trans* fatty acids. In the biochemical nomenclature, the position of the terminal double bond can be denoted in the form (n-x), where n is the length of the fatty acid chain and x is the number of carbon atoms from the last double bond, assuming that all the other double bonds are methylene-interrupted (Gunstone et al., 1994). Therefore, the use of both n-x and omega-x terminologies are restricted to monoenoic and polyunsaturated fatty acids having methylene-interrupted ethylenic double bonds. Moreover, the n-7 fatty acid

family consists of the metabolites formed from palmitoleic (16:1 n-7) acid (Wolff, 1995).

The arguments of the authors to exclude vaccenic and rumenic acid from the *trans* fatty acid and the CLA categories, respectively, are based on the nutritional values of these lipids. However, in the strictest sense, vaccenic and rumenic acids *should* be considered *trans* and conjugated fatty acids, respectively. It is well established that these two components have specific metabolic behaviors. In particular, due to future mandatory labeling of *trans* fatty acids in food products, the assessment of cardiovascular heart disease risk of vaccenic acid compared with elaidic acid should be considered a priority for the dairy science community (Aro, 2004).

In conclusion, the idea of Ellen and Elgersma (2004) to distinguish *trans*-11 18:1 and *cis*-9, *trans*-11 18:2 acids from the other *trans* and conjugated fatty acids formed by processing oils and fats is acceptable. However, for the reasons discussed above, the use of n-7 terminology is not suitable. In our opinion, it is much more appropriate to use their trivial names, vaccenic and rumenic acids.

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