

Perplexity on Fatty Acid Identification in Purslane (*Portulaca oleracea*) Tissues

Sir:

I would like to make some comments on the recent paper "Omega-Three Fatty Acids in Purslane (*Portulaca oleracea*) Tissues" by T. R. Omara-Alwala, T. Mebrahtu, D. E. Prior and M. O. Ezekwe [*JAOC* 68:198 (1991)]. The fatty acids, listed in Table 2, were analyzed by gas chromatography (GC) with packed column. Moreover, some of those compounds were identified as unsaturated ω -3.

Our study on lipids of *Portulaca oleracea*, carried out by capillary gas chromatography, [*Riv. Ital. Sostanze Grasse* 68:287 (1991)] showed the presence of C20, C22 and C24 saturated fatty acids, which have long retention times, but not the C20 polyunsaturated ones. These results were confirmed by argentation thin-layer chromatography (TLC-AgNO₃) and capillary GC of TLC bands.

Retention times of C20 polyunsaturated fatty acids (methyl esters) on packed columns and sometimes even on capillary columns are often close to those of the C20-C22 unsaturated components. In these cases it is necessary to validate the identification by using different analytical techniques (hydrogenation and GC retention times, TLC-AgNO₃, GC-mass spectrometry, etc.). This step appears particularly important considering the nutritional interest of ω -3 polyunsaturated fatty acids (see the title).

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Sir,

Having read the paper of Omara-Alwala *et al.* "Omega-Three Fatty Acids in Purslane (*Portulaca oleracea*) Tissues" [Omara-Alwala, T.R., T. Mebrahtu, D.E. Prior and M.O. Ezekewe, *J. Am. Oil Chem. Soc.* 68: 198 (1991)] with great interest, I feel some doubt whether purslane really is "the richest source of omega-3 fatty acids of any vegetable yet examined" and therefore could be "an alternative to marine sources of omega-3 PUFA". Following the publication of the first investigations on the omega-3 fatty acids of purslane [Simopoulos, A.P., and N. Salem, *N. Engl. J. Med.* 315:883 (1986)], there has been some interest in Germany and in Austria concerning the potential benefits of this plant [Koch, H.P., *Deutsche Apotheker-Ztg.* 128:2493 (1988); Schneider, K., and W. Kubelka, *Österreichische Apotheker-Ztg.* 44:287 (1990); Willigmann, I., H. Sommer and N. Beusch, Poster Presentation, 39th Annual Congress on Medicinal Plant Research, Saarbrücken, Germany (1991)].

Unfortunately, the most abundant (PUFA) of purslane is 18:3n-3, commonly known as α -linolenic acid, a major compound of many other vegetables and seed oils, such as linseed oil (*Oleum Lini* of *Linum usitatissimum*). Contain-

ing approximately 40% fatty oil, with up to 65% α -linolenic acid, linseed appears to constitute by far the richest known source of this PUFA. To my knowledge, however, the accurate *in vivo* transformation rate of this "precursor", 18:3n-3, into the pharmacologically active 20:5n-3 and 22:6n-3 PUFA has not yet been clarified, and under the present human nutritional conditions only minor desaturation and C-chain elongation seem to occur. Therefore, in Austria and Germany purslane is not considered a reasonable alternative to marine sources of omega-3 PUFA. I would be grateful to hear about the present situation in the U.S. of any recent investigations concerning the nutritive effect or use of plants containing omega-3 PUFA.

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