

RESEARCH NOTE

VITAMIN C IN ACEROLA AND ROSE HIPS

In a valuable and beautifully illustrated publication by Bruce R. Ledin on the acerola,¹ the vitamin C content of different fruits, on the basis of ascorbic acid in milligrams per 100 gm. of juice or edible matter, are compared. According to the author, the figures reported in table 1 of his paper are taken from several publications and presented in descending order as to their ascorbic acid content, to compare them with the acerola. In this table Ledin rated *Rosa rugosa* hips first, because they contain 1,700 to 6,977 mg. of ascorbic acid per 100 gm. of edible matter, and assumed these values to be on wet basis, the only acceptable basis of comparison for the values quoted for the acerola. The Barbados cherry, as Ledin prefers to call the acerola, is rated second with values between 1,000 to 4,676 mg. of ascorbic acid per 100 gm. of juice taken from Asenjo and Guzmán² and Mustard³ publications.

Although Ledin does not state the source of his information on *Rosa rugosa* hip, we suspect it was obtained from a paper by Olof E. Stamberg.⁴ In this work hips from rose plots in the locality of Moscow, Idaho, were studied by Stamberg. These particular hips belonged to two species, *R. spaldingu* and *R. megalantha*, respectively, and they contained, per 100 gm. of fresh ripe pulp (meat), an average of 1,498 and 1,105 mg. of ascorbic acid, respectively. The meat and seed in these rose hips ranged from 62.8 to 75.0 percent and 25.0 to 37.2 percent, respectively. In the introduction to his paper Stamberg reviewed the literature on rose hips and quoted figures from a paper by Vadova, Beider, and Yanishevskaya⁵ in which the Russian investigators found that *R. ciunamomea* and *R. rugosa* ripened early and ranked high in vitamin C potency of from 2,275 to 6,977 mg. per 100 gm. However, Stamberg does not state whether the data are expressed on dry or wet, pulp or whole-fruit basis. He indicates he obtained this information through *Chemical Abstracts* and not from the original publication.

¹ Ledin, Bruce R., The Barbados or West Indian Cherry, Bul. 594, Contrib. Sub-Tropical Experiment Station, Homestead, Fla., 1958.

² Asenjo, C. F. and Freire de Guzmán, A. R., The high ascorbic acid content of the West Indian cherry, *Sci.*, **103** 219, 1946.

³ Mustard, M. J., The ascorbic acid content of some *Malpighia* fruits and jellies, *Sci.* **104** 230-1, 1946.

⁴ Stamberg, O. F., Vitamin C and carotene in rose hips and products, *Food Res.*, **10** 392-6, 1945.

⁵ Vadova, V. A., Beider, T. I. and Yanishevskaya, M. V., II Biochemistry of the vitamins: Dynamics of the accumulation of vitamin C in dogrose hips, *Proc. Sci. Inst. of Vitamin Research (USSR)* **3** (1) 157-63, 1941.

Recently we have secured through the Kresge-Hooker Scientific Library Translating Service the original publication of Vadova and coworkers.⁵ It is clearly stated in this paper that the values reported for *Rosa rugosa* and all the other *Rosa* species investigated are for ascorbic acid in milligrams in 100 gm. of dry fruit pulp. The particular maximum value of 6,977 mg. per 100 gm. of dry pulp quoted by Ledin is for fruits containing 22.0 percent of dry matter in the fruit pulp. Therefore, if this value is calculated on a wet basis, the ascorbic acid content is reduced to 1,535 mg. of ascorbic acid per 100 gm. of wet pulp. In other words, the ascorbic acid content of this highly ranking rose hip, when calculated on a wet basis, is well below the maximum value found for the acerola juice on a wet basis. The semiripe acerola fruit contains in the neighborhood of 80 percent of juice. It should be mentioned here also that dry acerola-juice powder, now locally manufactured in Puerto Rico, ranges between 25,760 to 32,450, and averages 27,220 mg. of ascorbic acid per 100 gm. of powder. These figures have been supplied to us by the laboratory of the Department of Agriculture of Puerto Rico which regularly analyzes samples collected by their inspectors at the manufacturing plant, in Toa Baja, Puerto Rico. Therefore, either on wet or dry basis, the acerola juice ranks higher in ascorbic acid than the pulp of the *R. rugosa* hip.

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