

THE ASCORBIC ACID VALUE OF SOME EXTRA FOODS

Laura A. Miller and Helen B. Burton
University of Oklahoma, Norman

As many people do not care particularly for citrus fruits or raw tomatoes, listed as our best sources of ascorbic acid, but do like marmalade, catsup, and chili sauce made of these good sources of this vitamin, these cooked products were checked for ascorbic acid. Orange marmalades (made according to a recipe stipulating vinegar, lemon peel and juice, as well as orange; made with liquid pectin and a little soda; and made with liquid pectin and no soda), tomato preserves, chili sauce, and catsup were all tested. Some of the products stood about 8 months before testing; some were tested as soon as made and again three months later. The chemical titration method, using the dye 2-6 dichlorophenolindophenol, was followed. All of the usual precautions, such as using glass-distilled water, adding metaphosphoric acid to the product during the extraction process, standardizing the sodium thiosulphate and the dye, etc., were observed. Since the marmalades made with liquid pectin tended to have peel and pulp at the top of the glass and a fairly clear jelly at the bottom, samples from both sections of the glass were tested. The results showed considerable variation. In the table, averages for the various products are given. At least three tests were run on each sample.

So far as the marmalades are concerned, length of storage had more effect than method of preparation. The two marmalades that had stood 8 months before testing had about the same amounts of ascorbic acid even though one contained soda, and the other did not, but had added lemon juice and peel. Of the marmalades tested immediately after preparation, the one made with soda had a slightly higher value. However, after standing 3 months, the values are reversed.

Of the products tested, the chili sauce had the highest ascorbic acid value, the fresh marmalades the next highest, and the tomato catsup the lowest value. A 20-gm sample made a slightly rounded tablespoon, and was considered an average serving. Some people may eat larger portions or partake of these products more often. If they are used in the amounts indicated and at only one meal daily, the amounts of ascorbic acid added to the diet are not impressive, but they are worth our consideration.

TABLE I
Ascorbic acid content of food products

Food	Ascorbic acid content per gram			Ascorbic acid content per 20-gm serving		
	Time interval			Time interval		
	Immediately after preparation mg	Three months later mg	Eight months later mg	Immediately after preparation mg	Three months later mg	Eight months later mg
Orange Marmalade A	---	---	.093	---	---	1.890
Orange Marmalade B	---	---	.094	---	---	1.880
Orange Marmalade C	.1686	.1091	---	3.372	2.163	---
Orange Marmalade D	.1504	.1102	---	3.008	2.204	---
Tomato Catsup	---	---	.0415	---	---	.832
Tomato Chili Sauce	---	---	.209	---	---	4.180
Tomato Preserves	---	---	.1024	---	---	2.048

Orange Marmalade A—orange pulp and rind, sugar, water, lemon juice and peel, cider vinegar.

Orange Marmalade B—orange pulp and rind, sugar, water, soda, liquid pectin.

Orange Marmalade C—orange pulp and rind, sugar, water, soda, liquid pectin; made at a later date than B.

Orange Marmalade D—same as C except soda omitted.