Tests With Cut Flower Preservatives

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The addition of chemicals and so-called cut flower "foods" to the water in which flowers are arranged has long been advocated for prolonging their useful life. Unfortunately, most of these preservatives are effective only if placed in the water used by the consumer. Most preservatives have not been effective when used by the grower or wholesaler.

In testing cut flower "foods" and preservatives at Colorado A & M, use is made of an insulated keeping room. The temperature is accurately controlled at 66 to 68°F in winter and the humidity is held rather closely in the range of 60-70%, with no drafts or rapid changes. In all tests the flowers are either hardened 24 hours at 38°F then placed in the keeping room, or placed directly in the keeping room following harvest. Flowers have kept equally well under these conditions when handled in either manner.

In every test the comparison was made with the keeping of cut carnations in clean containers of soft water. The water used is neutral in pH and contains a very low amount of salts. BK (calcium hypochlorite) was used at the rate of $\frac{1}{4}$ teaspoon per gallon of water or 100 ppm chlorine. Alum was added at the rate of $\frac{1}{2}$ teaspoon per gallon of water. In two tests sugar (sucrose) was used at 2 teaspoons per gallon. Commercial materials were used according to the manufacturers directions.

The results of tests with several materials at 10 different periods during the fall and early winter of 1954 are shown in Table 1. From five to eight flowers were used per treatment in each test. Comparisons can be made within tests only, since the potential life in untreated flowers varied from one period to another.

Table 1. The effect of selected chemicals and mixtures on the average keeping life of cut White Sim carnations.

	Average keeping life in days[a]									
Tests--	1	2	3	4	5	6	7	8	9	10
Water only	10.0	9.6	9.8	9.4	10.0	8.2	9.7	9.4	7.7	8.1
BK	10.5	10.8	9.6	9.8	9.8					
BK and ammon. alum	12.8		12.2	10.6	11.0	10.2	12.4	13.4	13.7	11.5
BK, ammon. alum, sugar						12.8				15.1
BK and potassium alum								15.7	10.7	11.6
Floralife		16.4	16.2	11.2	16.6	17.4	16.7	11.9	10.9	8.5
Morlife							21.6	19.7	21.1	*

*All flowers good after 17 days.

BK is a trade name for calcium hypochlorite. Wyandotte and other forms are equally good.
Floralife is a standard product from Floralife, Inc., Chicago.
Morlife is a cut flower food manufactured by the Denver Wholesale Florist's Company.

[a]/Differences of 0.7 day required for significance in most tests.

A dilute bactericide such as BK does not add to the keeping life unless the container or water is dirty. In such case BK enhances the cut flower keeping life. BK is one of the many trade names under which calcium hypochlorite is sold. Chlorox (sodium hypochlorite) used at the same chlorine strength is equally good.

Alum may clarify the water or harden the water conducting vessels in the flower stems, or it may perform some entirely different function in lengthening the life of cut flowers. Both ammonium and potassium alum have been beneficial, probably equally so. These alums have increased the life of cut carnations from 2 to 6 days. When sugar (sucrose) was added to the alum solution the cut flower life was increased another two to four days.

Floralife, a standard in the industry for many years, increased the life of cut carnations from very little to as much as nine days. The inconsistent performance of Floralife in these tests makes it highly unreliable for carnations.

The four tests with Morlife were made during December and January. During this period it has more than doubled the cut flower life of carnations. The petals of the flowers do not lose their turgor and close as they do when the life of untreated flowers expires. After 15 days or more, slight burning of the petal edges occurred. When this burning was so serious as to detract from the appearance of the flower, the life of that flower was counted as expired.

The producer of cut flowers is interested in a flower food material which can be put in the flower after harvest to extend the keeping life of those flowers and at the same time cause them to last uniformly, regardless of the food stored in the flowers at harvest time.

To prepare such a food material requires more exact knowledge of what foods within the cut flower actually contribute to its cut flower life. Intensive research on this problem is currently being done at Colorado A&M.