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Vitamin C in foods and juice

Extracted, with permission of the authors, from pages 74-76 of Nature of Biology: Activity Manual Book 1, by Gleeson, McCooey, Kinnear, Martin, Foster & Edmondson, 1992, The Jacaranda Press.

Vitamin C, also called ascorbic acid, occurs in a number of foods, particularly in citrus fruits and leafy vegetables. It is essential for healthy bones and teeth, and helps in wound healing and the absorption of iron.

The amount of vitamin C in a food may be influenced by a number of factors such as the age of the food, the method of storage of the food, and the way in which the food has been cooked.

The vitamin C content of a variety of fruits can be tested using indophenol, a blue indicator that becomes colourless in the presence of vitamin C.

Materials:

For part A: indophenol solution, 0.1%; ascorbic acid solution, 0.1%; ascorbic acid solution, 0.05%; 4 test tubes; 2 droppers.

For part B: indophenol solution, 0.1%; 7 test tubes; 6 droppers; test tube rack; orange; lemon; grapefruit; juice extractor; filter funnel; tissue; foil for covering test tubes.

Procedure:

Part A: Establishing a standard

1. Place 15 drops of the 0.1 % indophenol solution in a test tube.
2. Add the 0.1% ascorbic acid solution, one drop at a time, to the indophenol.
3. Swirl the test tube after each drop is added.
4. Continue until the indophenol becomes colourless.
5. Count the number of drops of 0.1% ascorbic acid solution required to decolourise the indophenol solution. Record this result.
6. Repeat steps 1 to 5 with a second indophenol sample.
7. Obtain an average for the number of drops of 0.1% ascorbic acid solution required to decolourise the 15 drops of indophenol. Record this average.
8. Repeat steps 1-7 using the 0.05% ascorbic acid solution. Record your results.

Part B: Testing the juices

The following instructions are for preparing and testing orange juice. Lemon and grapefruit can be prepared for testing in the same way. It is important that you do not contaminate one juice with another, so if you have to use the same equipment for testing different juices, ensure that you wash it well between tests.

1. Preparing the juice

- (a) Squeeze an orange.
- (b) Filter out any solid material
- (c) Divide the juice into five approximately equal parts in test tubes labelled A to E.

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