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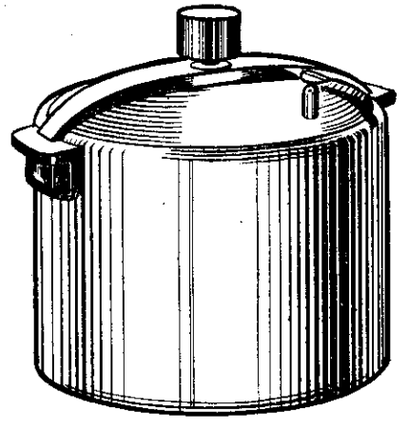
Advice on Health (No. 275)

PRESSURE COOKERS

(Written for "The Listener" by DR. MURIEL BELL, Nutritionist to the Department of Health)



I CONFESS to having had some prejudices against the use of pressure cookers for everyday use, because I suspected that they might do some damage to certain food constituents. My prejudices arose because of having used similar laboratory appliances for destroying the vitamin B1 in foods in experimental work (with the accompaniment of alkali, be it said). Therefore it has been with great interest that I have followed the recent reports on the effect of pressure-cookers on the nutritive value of foods, when compared with other methods of cooking, and most of my prejudices have had to be discarded.

The effect of cooking by various methods has been compared and reported in several articles in the following journals: *Food Research* (1945 and 1947), *The Journal of the American Dietetic Association* (1947). The dietary factors studied have been: vitamin C, and four of the vitamins of the B group, namely, B1, riboflavin, niacin and pantothenic acid. The foods studied have been meat and vegetables.

The results have gone to show that there is no significant difference in values for these constituents provided that the minimum time for cooking them is adhered to, and provided that the cooking water or the broth or gravy is used in each case. For example, if meat is seared, then cooked in a pressure-cooker for the shortest time taken to bring it to the same degree of tenderness, no greater loss occurs in vitamin B1, than in the case of meat cooked for a longer time at a lower temperature. About half the total vitamin B1 is retained in stews cooked to the same degree of tenderness by pressure-cooking, boiling or simmering. Similarly, when vegetables are cooked in a pressure cooker, and compared with similar samples cooked in a covered saucepan with a minimal amount of water, or in a steamer (in each case the vegetables being cooked just long enough to make them tender) the amount retained varies with the vegetables, being from 60-70 per cent. of the vitamin C and 80-90 per cent. of the B vitamins in cabbage strips; 40-50 per cent. of the vitamin C and about 80 per cent. of the B vitamins in the case of spinach; 80-90 per cent. of the vitamin C and 90-95 per cent. of the B vitamins in the case of green peas; and about 85 per cent. of the vitamin C in potatoes.

If vegetables are put into boiling water, enough to cover them in an ordinary saucepan, and brought quickly to the boil, much of the vitamin C is soaked out into the cooking water. Now if the cooking water is all used immediately, much the same total result is achieved as by the other methods of cooking already described. If, on the other hand, the water is drained off and discarded, a very great loss occurs both in vitamin and mineral value, including loss of a considerable amount of iodide from the iodized salt that was added.

Pressure-Cooking and Flavour

Palatability scores have been given by those who are expert at judging flavours of cooked vegetables. After all, most of us put flavour first, justifiably so to my mind. Flavour is surely the most important attribute of a good food because one will eat more, say, of a vegetable that has an acceptable taste—and be it noted that the size of helping of vegetable on the New Zealand dinner plate is often much below what it ought to be for preventing constipation or for conferring vitamin C. Acceptability ratings for peas were definitely highest for the pressure-cooker. For spinach, the steamer and the pressure-cooker were placed second to the method of cooking in water (because loss of some of the flavour was judged to be an advantage—but remember that the vitamin C goes into the water, so perhaps we should do better to tone down the flavour of spinach, as they do on the Continent, by thickening it with flour and milk). Acceptability values for cabbage put two methods first equal; namely, the pressure saucepan and the method of putting the cabbage quickly into boiling water, enough to cover. Remember again that by the latter method, a very large proportion of the vitamin C is soaked out into the cooking water.

Not having a pressure-cooker, my own particular method of getting good flavour and maximum vitamin retention from cabbage is to add the shredded cabbage to boiling water a little at a time, keep pressing it down into the water, bring rapidly to the boil, add a little more—and so on. Then when it has all come to the boil, turn the flame down, and as it is now about time to serve the soup, most of the liquor is pressed from the cabbage and added to the soup plates. The rationale for the improved palatability of cabbage by this and by the pressure-cooker method is that there is a ferment that brings about the rank flavour. This ferment is destroyed by rapidly bringing it to the boil. On the contrary, the action of the ferment is enhanced, i.e., the flavour deteriorates, if the warming-up process is prolonged (as it is with the household steamer, or in large-scale cookery without proper equipment). There is another ferment that destroys vitamin C, and the rule for retaining vitamin C is also to bring vegetables like cabbage quickly up to boiling temperature.

Unanswered Questions

There are still some questions that remain unanswered about the use of pressure-cookers. For instance, do they destroy any other food constituents not yet tested for by laboratory methods? We still do not know what will be the effect on human health of the daily use over a lifetime of the pressure-cooker. For that matter, we still do not know whether to give good marks or bad marks to the frying pan. There are some good points about fried foods—the rapid cooking retains a surprisingly large amount of the vitamin content, and the palatability ranks high to most people's tastes, but on the other hand, there are points against the inclusion of too great a proportion of fat in the diet, and there are thought to be deleterious substances produced when fat is overheated. Frying in deep fat at temperatures below 300 degrees C. is believed not to produce these injurious substances. So we should be conservative and orthodox about how hot and how often the frying pan is used. The haybox in in disrepute because the length of cooking-time is so destructive of the vitamins in the food.

Returning to the pressure-cooker, those of us who are tinged with Scottish caution will say that we do not know

(continued on next page)

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