

crackling sensation. This phenomenon should be taken into account as an extra factor adding to the results observed by Ahern et al. (1) (at least in Italy). Obviously, this cannot be the sole explanation because the pizza used in the study was prepared by the staff of the New Haven Hospital and contained only 17.9 g mono- and disaccharides.

We have recently investigated the matter further and have obtained evidence that cane sugar is also customarily added to bread, in this case especially, to give it the brown color of the crust. We are actually planning an experiment, with the help of some diabetic volunteers, to evaluate the impact of this manipulation to the glycemic index.

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Reference

- Ahern J, Gatcomb PM, Held NA, Petit WA, Tamborlane WV: Exaggerated hyperglycemia after a pizza meal in well-controlled diabetes. *Diabetes Care* 16: 578-80, 1993

The Pizza Saga

Ahern et al. (1) found that, in IDDM patients, a pizza meal produced a higher glycemic response than a control meal of the same composition, which contained high GI foods. However, when the GIs of the meals are calculated (Table 1), the pizza meal has a higher value than the control meal and, thus, may be expected to produce a higher glycemic response.

The GI analysis is based on USDA food tables (2) and published mean GI values for the major foods (3). White flour was ascribed the same GI value as white bread, which is also made from flour, and we have recently shown that

pizza has the same glycemic response as bread (T.W., unpublished observations). The GI of the vegetables is based on their content of simple sugars, which roughly predicts the GI of fruits (4,5). The type of potato and whether it was fed with or without skin is not stated; I assumed no skin. The GI of white potato is 80, whereas a baked, Idaho russet potato is 116 (3). Using the GI for white or russet potatoes, respectively, results in GIs of 77.2 or 86.4 for the control meal—18 or 8.5% less than that of the pizza meal, which is 94.5 for the pizza meal (adjusting for unequal CHO). The former difference is similar to the 25% observed difference in incremental glycemic response area (calculated from Table 1).

Ahern et al. (1) concluded that pizza has properties that accentuate and sustain hyperglycemia. GI analysis suggests that the responsible factor is white flour.

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Table 1—Meal GI calculation

	Pizza meal			Control meal		
	CHO (g)	Food GI	Meal GI	CHO (g)	Food GI	Meal GI
Food				Food		
Canned tomato	14.4	76	8.8	Bread	20.2	100
Tomato paste	4.4	76	2.7	Margarine	—	—
Olive oil	—	—	—	Mayonnaise	4.8	86
Onions	1.9	85	1.3	Turkey	—	—
Garlic	0.5	90	0.3	Cheese	3.3	46
Sucrose	6.7	86	4.6	Baked potato	32.3	80
Parmesan cheese	0.4	46	0.2	Lettuce	1.8	77
Mozzarella	4.3	46	1.6	Tomato	1.4	76
White flour	91.0	100	73.1	Oil	—	—
Yeast	0.9	100	0.7	Vinegar	—	—
Salt	—	—	—	Raisins	31.7	93
				Apple juice	30.6	45
Total	124.5	—	94.5*		126.1	—

*Adjusted for unequal CHO: $93.3 \times 126.1/124.5 = 94.5$.