

FRUIT CONTENT OF BREAKFAST CEREALS

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A cooperative study by The Connecticut Agricultural Experiment Station and The Connecticut Department of Consumer Protection

Manufacturers of breakfast cereal vigorously advertise how much fruit their product contains. Fruit is valuable, and manufacturers emphasize how rich their brand is in raisins, dates, or other fruit or nuts.

Our survey shows whether brands differ in percentage, by weight, of individual fruit and nuts. The sucrose and other sugars contributed by each component, i.e., grain, fruit, nuts, was also determined.

Methods

Thirty-one samples of household-size packages of breakfast cereal containing fruit and nuts were purchased at retail stores by an inspector of the Connecticut Department of Consumer Protection.

Fruit and nuts were physically separated from the grain or flake portion of the product and weighed as obtained. The net weight, fill of container, and sugar content of the separated ingredients were determined by Official Methods (1). The sugar content includes sucrose as well as glucose and fructose. Where an ingredient could not be separated from the grain or flake portion of the cereal the sugar content of that ingredient was included together with the sugar content of the grain.

Results and Discussion

Percentage of fruit: Twelve of the 31 breakfast cereals claimed raisins as the only fruit (Table 1). Included were 8 raisin-bran cereals (samples 1,4,12,14,19,22,29,30), which averaged 22% raisins, with a range from 17 to 26%. Three of the 4 non-bran cereals (7,15,28) contained more than 20% raisins, but sample 6 had only 3.6%.

Eight other samples shown in Table 1 (8,10,16,17,18,23,25,26) also contained a single fruit or nut: either bananas, peanuts, dates, apples, or almonds. In 4 of these (8,16,17,18), however, the ingredient was too fine to be distinguishable and separable, and in the case of sample 17, the fruit adhered too tightly to the grain flakes to be separated. Only sample 10 claimed a specific amount of fruit, 37% dates; only 33.4% was found, but some dates were ground with the grain portion and were not included in the measurement. This was the highest concentration of fruit found among all cereals.

The labels of 11 samples listed two or more fruits or nuts (samples 2,3,5,9,11,13,20,21,24,27,31). All of these except sample 24, contained less than 10% of a single fruit or nut ingredient, and some

Table 1. Percentage of fruit, nuts, and sugar and net weight and fill of container in breakfast cereals.

Sample Number	Brand & Type	Fruit & Nuts, %	Sucrose & other sugars, %				Fill of Container, %	Net weight, % of claim	Sample Number
			in fruit	in grain	in nuts	total			
1	A & P Raisin Bran	raisins 20.6	10.6	17.0	—	27.6	80	106	1
2	Better Way Granola-Almonds & Seeds	sesame seeds ^b , sunflower seeds ^b , almonds ^b	19.5	—	—	19.5	80	101	2
3	Erewhon Date Nut Granola	walnuts 6.0, dates 3.5, sesame seeds ^b	6.9	1.1	0.4	8.4	82	101	3
4	Food Club Raisin Bran	raisins 23.0	11.2	9.2	—	20.4	90	102	4
5	Food Club 100% Natural Cereal-Raisins & Dates	raisins 5.6 ^c , dates 2.5, almonds 3.8	20.9	4.4	0.5	25.8	57	103	5
6	General Mills Nature Valley 100% Natural Cereal-Cinnamon & Raisins	raisins 3.6	19.5	1.7	—	21.2	56	103	6
7	General Mills Crispy Wheats'N Raisins	raisins 21.9	21.0	7.5	—	28.5	74	101	7
8	General Mills Honey Nut Cheerios	almonds ^a	32.8	—	—	32.8	81	102	8
9	General Mills Nature Valley Granola, 100% Natural Cereal-Fruit & Nuts	dates 5.2, almonds ^b	21.5	3.4	—	24.9	56	103	9
10	Good Shephard (Sovex) Cereal Bran'N Dates	dates 33.4	6.2	20.0	—	26.2	70	105	10
11	Good Shephard (Sovex) 8 Grain Apple Cinnamon Cereal & Snack	apples 5.4, soybeans 5.6, sunflower seeds 1.2, cashews 1.1	13.3	2.1	0.7	16.1	90	103	11
12	Health Valley Bran Cereal-Raisins	raisins 16.9	5.0	6.0	—	11.0	75	103	12
13	Health Valley 100% Natural Sprouted Cereal-Amaranth & Bananas	bananas 5.2, almonds 4.3, pineapple 0.1, papaya 1.0	5.1	1.1	0.2	6.4	75	103	13
14	Kellogg's Raisin Bran	raisins 23.4	13.0	11.0	—	24.0	80	103	14
15	Kellogg's Raisins, Rice & Rye	raisins 24.6	9.5	9.5	—	19.0	79	106	15
16	Kellogg's Apple Jacks	apples ^a	45.9	—	—	45.9	87	102	16
17	Kellogg's Banana Frosted Flakes	bananas ^a	33.3	—	—	33.3	88	101	17
18	Kellogg's Honey & Nut Corn Flakes	peanuts ^a	32.4	—	—	32.4	75	107	18
19	Master Sales Raisin Bran (Generic)	raisins 26.4	2.1	10.5	—	12.6	81	103	19
20	Olde Mill Maple Nut Granola	raisins 4.6, sunflower seeds 3.1, filberts 1.9, almonds 0.4	12.4	1.9	0.5	14.8	70	103	20
21	Orangeola Natural Cereal-Almonds & Dates	almonds 1.5, dates 5.2	29.0	1.1	0.4	30.5	56	103	21
22	Post Raisin Bran	raisins 24.2	12.9	11.9	—	24.8	76	99	22
23	Post Fruit & Fibre-Apples & Cinnamon	apples 9.6	17.8	2.6	—	20.4	78	101	23
24	Post Fruit & Fibre-Dates, Raisins & Walnuts	dates 8.4, raisins 10.6, walnuts 2.6	12.9	11.0	0.1	24.0	78	101	24
25	Quaker 100% Natural Cereal-Apples & Cinnamon	apples 6.4	18.6	2.4	—	21.0	84	103	25
26	Quaker 100% Natural Cereal	almonds 5.6	19.2	—	0.6	19.8	93	101	26
27	Quaker 100% Natural Cereal-Raisins & Dates	raisins 9.1, dates 2.5, almonds 4.9	18.0	5.0	0.6	23.6	84	101	27
28	Ralston Purina Wheat & Raisin Chex	raisins 21.2	5.1	9.6	—	14.7	80	104	28
29	Shop Rite Raisin Bran	raisins 16.7	11.7	8.6	—	20.3	81	116	29
30	Skinner's Raisin Bran	raisins 26.3	2.2	7.8	—	10.0	70	103	30
31	Sovex Honey Almond Granola	almonds 1.2, sesame seeds ^b	12.7	—	0.1	12.8	84	103	31

^a Present as particles too fine or too tightly adhering to the grain flakes to be separated.

^b Too fine or too intimately mixed with other ingredients to be separated.

^c Raisin and date pieces intimately mixed and separation probably not complete.

contained less than 1%. Some of these samples contained over 10% total fruit; sample 24 was the highest with 21.6%. Again, some ingredients were not measurable since they could not be separated (samples 2,9,31). Four cereals labeled as granola, (sample 2 not included) contained 1 to 10% fruit and nuts.

Ingredients listed on labels must appear in the order of decreasing concentration. In Table 1, under the column "fruit and nut %" ingredients are listed in the order on the label. For some samples the listed order was not the same as found on analysis. An example was sample 13 where pineapple was listed before papaya, yet the concentration of papaya was 10-fold greater than pineapple. Another example was sample 21 with 3-fold more dates than almonds.

Sucrose and other sugars: The sugar content of the cereals includes sucrose, usually added during manufacture of the grain portion, and glucose and fructose naturally in fruit, nuts, and honey. Sugar content of the cereals averaged 21.7% with a range from 6 to 46% (Table 1).

Nineteen of the cereals had more than 20% sugar. Sample 16 was notably high in sugar with 45.9%. Four of the 19 (samples 8,17,18,21) had more than 30% sugar but 3 of the 4 (8,18,21) may have derived a large portion of the sugar from honey.

The sugar content of the grain portion of the cereal, which includes any added sugar, ranged from 2 to 46%, averaging 16.2%. Nuts contributed little sugar to the total; the average for 10 samples was 0.4%. Fruit contributed considerably more sugar than nuts, the average for 24 samples being 6.9%. It is obvious from the data in Table 1 that raisins in the various cereals differ considerably in their sugar content, perhaps because some were sugared.

If little sugar is contributed by the fruit and nuts and the amount of grain is high, sugar likely was added either as sucrose or honey. One example is sample 21, which lists honey as an ingredient. Only about 5% of the sugar in this cereal was from almonds and dates, and 95% was from the grain portion. Another example is observed in sample 6, to which fruit contributed about 8% sugar and the grain 92%. In both these examples the products probably contained added sugar. Similar conditions were observed in samples 5,7,23,27.

In sample 19, on the other hand, raisins contributed 83% of the sugar and grain 17%. This product probably contained little added sugar. Similar examples were seen in samples

10 and 30.

The 12 cereals containing raisins as the only fruit or nuts had an average sugar content of 19.5% with a range from 10 to 27.6%. The 8 bran cereals with raisins averaged 18.8%. Granola cereals averaged 16.1% and those with at least 3 fruits or nuts averaged 18.6%.

Fill of container: Fill of container describes how much food is present in relation to the capacity of the box or bag. The average fill was 77% and ranged from 56 to 93%. Four samples in opaque packages (5,6,9,21) were below 60% fill, a level considered unsatisfactory.

Net weight: All samples correctly contained the net weight as stated on the label. The average was 103% of the weight claimed with a range from 99 to 107%.

Summary

All except one of the 12 breakfast cereals claiming only raisins contained about 21% raisins. Eight raisin-bran cereals averaged 22% raisins. Samples containing 3 or more fruit or nut ingredients averaged a total of 14%, but the range was 10 to 22%. In some samples, ingredients were too finely ground or they adhered too tightly to the grain or flakes to be separated. The greatest amount of fruit in any sample was 33.4% dates.

Sugar content averaged 21.7%. Cereals with raisins as the only fruit averaged 19.5%. Fourteen cereals had 20 to 30% sugar, 4 had 30 to 40%, and one contained 46%. Nuts contributed little sugar to the total, whereas fruit contributed 6.9%.

Although the average fill of container was 77%, 4 samples were below 60% fill, an unsatisfactory level for food in opaque packages. Net weight claimed on the label of all samples was accurate.

Acknowledgements

We thank J. Hayes and L. Hornig for the analyses and E. Hawley, Chief, Food Division, Connecticut Department of Consumer Protection, who arranged for collection of samples by Inspector F. Zullo.

References

1. Official Methods of Analysis. 13th ed. W. Horwitz, ed. Association of Official Analytical Chemists, Washington, D.C., 1980.