CHOCOLATE AND COCOA
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Chocolate is made by grinding roasted cacao seeds (Theobroma cacao). It contains about 50% fat, 5% protein and 30% carbohydrate.

Cocoa is chocolate deprived of approximately half of its fat, and reduced to powder form. Cocoas may be classified as natural American or as "Dutch". The "dutching" of cocoa is done to darken the product by adding a chemical solution (carbonates, bicarbonates, or hydroxides of sodium, potassium, or ammonium) to the partially roasted nibs. When the roasting is completed this treated material is ground and finished as Dutch cocoa (1). A brand of such an alkali-treated cocoa was recently reported (2) to have had a somewhat inhibiting effect on the growth and well-being of mice. At the same level of intake, a brand of natural American process cocoa had no such adverse effect. "Instant" cocoas are of the Dutch process type. This is stated in the labels of the various "Dutch" cocoas and chocolate or cocoa flavored drink preparations. Chocolate and cocoa contain some caffeine, varying in amount with the variety of seeds blended in each brand. A cup of coffee or tea may yield 100 to 150 milligrams of caffeine (4) which is approximately standard medicinal dose. Much less is found in cacao beverages.

A recent analysis (3) of cocoa powders found the caffeine content to range from 0.17 to 0.46% with an average of 0.28%. On the basis of these figures, a cup of cocoa beverage made with one level tablespoonful of the powder (7 gm.) would yield 12 milligrams of caffeine for the brand containing the least, 32 milligrams for the one containing the most and 20 milligrams for the average. While some investigators treat the caffeine of chocolate and
cocoa as negligible, others point out the possibility that a cupful may contain as much as 40 to 50 milligrams which is approximately one-third that contained in a cup of coffee or tea (4).

Products made with chocolate or cocoa, of course, also contain certain amounts of caffeine. A 3 1/2 ounce chocolate bar has been variously reported to yield from 18 (5) to 30 (6) milligrams of this alkaloid. The amount found would depend, no doubt, upon the kind and concentration of chocolate or cocoa used as well as the method of analysis (5).

Cacao products contain considerable theobromine (about 2 1/2 %) (3). This product, while closely related to caffeine, gives little central nervous system stimulation, but it is an effective diuretic (4). It may cause bedwetting in children and undesirable urinary frequency in others. Cacao products also contain a volatile oil, which, acting together with the theobromine, may cause epigastric distress through local irritation of the mucous membranes (7). In large amounts (2 oz. when dry) cocoa has caused headache and nausea (8). As usually eaten in rich mixtures with sugar and milk, chocolate or cocoa could provide ample cause for digestive distress. The per capita consumption in this country is nearly 4 lbs. per year (9).

Another questionable ingredient of cacao products is tannic acid. It is reported (12) to contain 215-371 milligrams per cup of beverage. In comparison, tea contains 94-475 milligrams per cup. Besides these, coffee, claret, rhubarb and unripe persimmons and plums are also reported to contain tannic acid (11).
It is difficult to determine what effect the amount of tannin in cacao products might have upon the health over a long period of habitual consumption. It is postulated that the possibility should be considered an excessive use might, under certain conditions, result in injury to the liver (12).

Clinical reports list chocolate and its products among the foods that most commonly aggravate acne. Adolescents and youth are the main sufferers from this disease. They are also probably the main consumers of quantities of chocolate candy and ice cream.

Unlike coffee and tea, cacao products are concentrated foods though not of the most desirable kind because of the caffeine, theobromine, and tannin contents and because of the rich combination in which it is usually eaten.

Although chocolate as a beverage became popular as early as coffee, it not earlier, there seems to be no mention of it in the inspired counsels. However, the criteria for the desirability of any food is its effect upon the health and performance of the consumer. All our food and drink should be chosen with this principle in mind.