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# THE DIGESTIBILITY OF THE FAT OF THE AVOCADO

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With the increasing importance and more general use of the avocado, it seemed desirable to know something as to its actual food value and the digestibility of its most important constituent. As is the usual procedure in such work, an individual who is well and normal is given a diet of known composition and the solid excreta (feces) are properly collected and analyzed.

In this experiment the basal diet consisted of graham crackers, cottage cheese and milk, to which was added on some days 25 grams of butter per meal, on others 100 grams of avocado per meal. In the preparation of the avocado the fruits were peeled and ground to a uniform pulp which was spread upon crackers like butter.

The periods of avocado and butter diet varied in length from 2 to 4 days and the feces resulting from each diet were separated from those of the preceding and following diets by charcoal pills taken at the beginning of each period. Fat was determined by the Saxon method on the fresh samples without previous drying.

Following is a summary of the data on fat ingestion and excretion:

| 1<br>Days | 2<br>Diet | 3<br>Fat ingested<br>(grams) | 4<br>Fat excreted<br>(grams) | 5*<br>Fat absorbed<br>(grams) | 6<br>Digestibility<br>(5/3x100)<br>(percent) |
|---|---|---|---|---|---|
| | | | SUBJECT 1 | | |
| 1-2 | Butter | 298.7 | 20.0 | 278.7 | 93.30 |
| 3-4 | Butter | 325.4 | 21.8 | 303.6 | 93.30 |
| 5-6 | Avocado | 292.6 | 16.8 | 275.8 | 94.25 |
| 7-9 | Avocado | 521.9 | 32.7 | 489.2 | 93.77 |
| 10-11 | Butter | 325.4 | 16.7 | 308.7 | 94.89 |
| 12-15 | Avocado | 610.7 | 42.2 | 568.5 | 93.09 |
| 16-17 | Butter | 314.5 | 19.9 | 294.6 | 93.65 |
| | | | Average digestibility of fat on butter diet | | 93.80 |
| | | | Average digestibility of fat on avocado diet | | 93.70 |
| | | | SUBJECT II | | |
| 1-2 | Butter | 313.4 | 22.8 | 290.6 | 92.73 |
| 3-4 | Avocado | 280.6 | 30.5 | 250.1 | 89.13 |

* equals 3-4.

The coefficients of digestibility have been calculated in the usual way on the assumption that the fat of the feces represents unabsorbed food fat. This assumption can not be held as valid for several reasons:

(1) The feces of a fasting animal contain fat.

(2) On a diet free from cellulose the amounts of fat in the food may vary considerably without a proportionate variation in the feces fat.

(3) In the present experiment the feces fat during the avocado periods was not of the consistency of avocado oil but differed not at all in general appearance from the feces fat of the butter periods. (This point is still under investigation).

But, even though the fat of the feces is not unabsorbed food fat, it may nevertheless be said that its amount is influenced by the quality and quantity of the diet, and that the difference between feces fat and food fat represents the net intake of fat by the organism on the given diet.

From the table the percentage utilization, or digestibility of the fat on the butter and avocado diets may be seen: in Subject I an average of 93.80 per cent for butter fat as against 93.70 per cent for the avocado; in Subject II 92.73 per cent and 89.13 per cent respectively. In a paper published recently (Bull. 310, U. S. Dept. of Agriculture, Nov. 1915) Langworthy and Holmes show that the digestibility of butter fat in their subjects varied from 90.9 per cent to 96.3 per cent with an average of 93.9 per cent, and since the value obtained on the present subject is 93.8 per cent it may rightfully be concluded that the fat digestion of this individual at the time was very near the average and that the digestibility of avocado fat is on a par with that of butter fat.

The single 4-day experiment on Subject II is of less value than the several and continued tests made on Subject I, but from the data of Subject II it would be concluded that the digestibility of avocado fat was not below that of beef fat, a value of 89 per cent being found by Langworthy and Holmes for this fat.

The above mentioned investigators find that of the fats tested (butter, lard, beef fat and mutton fat) those of low melting points are capable of more complete assimilation than those which have a high melting point. It is highly probable that the melting point is not the only criterion of digestibility but the low melting point of avocado oil undoubtedly favors its utilization. Other factors which must also favor its utilization are its finely emulsified condition in the fruit (suggesting milk) and the relative absence in the fruit of hard and resistant fibre (as in nuts) because of which fat is rendered less accessible to the digestive secretions.