

ANALYSIS OF Arrow Flour

(14)

(9)

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HCORN FLOUR

Analysis of Hearn's
fed Chinese at
Chusan - Ryo Camp
Hanacka Mine
Akita Prefecture
Kashima - Yumi

CHEMISTRY SECTION
406th Medical General Laboratory
APO 500 U. S. Army.

22 October 1947

C e r t i f i c a t e

I certify that this date Major Robert M. Patterson,
Cavalry, O-153811, requested that an object which he
called a 'Manto' and is said to be composed of dried
acorn flour and is part of Exhibit XXIV, Prosecution
Division, Legal Section, GHQ, SCAP, should be weighed,
which was done, and found to weigh 102 grams.

Bernard Balikov, 2nd Lt, Sr C

GENERAL HEADQUARTERS
SUPREME COMMANDER FOR THE ALLIED POWERS

BEFORE A MILITARY COMMISSION)
CONVENED BY AUTHORITY OF)
THE COMMANDING GENERAL)
UNITED STATES EIGHTH ARMY)
February 1946)

UNITED STATES OF AMERICA

VS

KEIZO SUZUKI

Sedentary

Common Labor

Heavy-Duty Labor

CHARGE

CHEMISTRY SECTION
406th Medical General Laboratory
APO 500 U. S. Army.

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A CERTIFIED TRUE COPY

H. C. Bishop
H. C. BISHOP
CAPT., Q.M.C.

The details set out below are revealed in sources available in the Prosecution Division in connection with the CHUSAN-RYO CHINESE LABOR CAMP case, in the form of certain legal Exhibits and the related evidence concerning them.

The exhibits referred to above consist of a 'manto' (compressed lump) of Acorn Meal, and other samples of the same meal, originally found at the Chusan-Ryo camp, Hanaoka Mine, Akita Prefecture, and now held as evidence.

The related additional evidence in this connection, briefly, is that for a time during the War the sole rations of the IMPORTED CHINESE LABORERS enslaved at heavy-duty labor in the Chusan-Ryo camp consisted of Acorn Meal only, in the amount of only 3 'mantos' per head per day.

Acorn Meal from the abovementioned Exhibits has been tested, its nutritive value analysed, and an estimate thus arrived at as to the maximum amount of food the Chinese nationals at Chusan-Ryo camp could possibly have received at the rate of 3 'mantos' per head per day.

The tests were performed by the Chemistry Section, 406th Medical General Laboratory (APO 500), and reported to the Legal Section in the form of "Laboratory Analysis No. 786" dated 16 October 1947.

The tests consisted of three main steps: (1) A typical 'manto' was tested, intact, for weight only; (2) Three hard, brown, wafer-like sections weighing approximately 10 grams each were tested (a) for odor, and (b) for tannic acid (said acid being the recognized toxic ingredient sometimes found in oaks); (3) the same three specimens were chemically tested for food content.

The basis of the "food" tests was: Nutritive Analyses (i.e., of the % of protein, carbohydrates, fat) of Japanese acorns (in fresh, normally dried, and in dehydrated condition) were obtained from authoritative texts, and, on the base figures thus obtained, calculations were made of the "food" (i.e., of the fuel or heat or energy or work) value expressed in calories per 100 grams of the material tested, using the commonly accepted estimate of 4 calories per gram for protein and carbohydrates, and 9 calories per gram for fat.

The findings of the Laboratory analyses (and their significance) are indeed striking, to say the least, and are summarized below as follows:-

Acorn Meal:

1. Weight of one 'manto' 102.2 Grams
2. Odor: none detected; Toxicity (tannic acid) All tests Negative.
3. Table: CALORIES PER 100 GRAMS OF ACORN MEAL TESTED

Species	Fresh	Dried	Dehydrated
Oak (*) (Fresh)	178		273
Oak (Dried)		304	359
Oak (Dried)		334	394
Yew (Fresh)	205		373
Yew (Dried)		347	409
Yew (Dried)		335	397
Oak (#) (Fresh)	244		393
Oak (Fresh)	207		383
Averages ----	208.5	330.0	372.6

Symbols: (*) Oak; variety, Quercus Dentata
 (#) Oak; variety, Quercus Glandulifera

Note: (1) "The Middle Column indicates calories per 100 grams after normal drying has occurred."

(2) "The last column indicates maximum values obtainable assuming last vestige of water to have been removed from the acorn meal - a condition which almost never obtains."

Collectively the above figures constitute a Table of food-values, in which various Findings occur, in the 'spread' between the lowest figure and the highest one. These internal variations result from the two variable factors ('species' and 'moisture') that enter into the basic statistical calculations; and in this connection, it would be fatal to mistake the lowest finding for a 'cellar' and the highest one for a 'roof'.

On the contrary, the essential fact to grasp in regard to the above tabulation is this: that each one of the findings stated therein is a 'ceiling' in its own right -- each figure represents the highest value obtainable in the conditions indicated in each case. The conditions (i.e., the two variable factors) vary, and the 'heights' of the ceilings vary accordingly; but ceilings they remain.

In other words, the Findings of the 406th Medical General Laboratory constitute, not merely a table of food-values, but a table of MAXIMUM food values for 'Chusan-Ryo' acorn meal.

Not all of the above findings need be dealt with individually in the present report of investigation, the whole practical purpose of which is to arrive at, then high-light, one additional and radically essential findings -- the utmost amount of nutrition that the 'Chusan-Ryo' slaves could possibly have received or ever did actually receive on a ration of acorn meal only at the rate of but 3 'mantos' per head per day.

For this purpose, 5 key-findings that are contained in the foregoing statistics -- the Lowest finding, the 3 Averages, and the Highest finding -- will more than suffice to stress the tragic basic situation which existed, in all its deadly significance.

The following consolidated Table essential premises and details with which This Report, so far, is concerned:-

Table - Approximate Maximum Food-Values In Calories. 'Chusan-Ryo' Exhibit, Acorn Meal

Items, Remarks & References:	406 MGL, Finding:	3 'Mantos', @ 100 Grams ea:	Approximate Food-Value:
1. Dry-Dehydrated Yew Acorns- (Item 5, Col 3) (Incredible)	410	x 3	1220-1300
2. Dehydrated Mixed Acorns - (Average, Col 3) (Possible)	375	x 3	1125-1200
3. Normally Dry Mixed Acorns - (Average, Col 2) (Probable)	330	x 3	990-1100
4. Fresh Mixed Acorns - (Aver. Col 1) (Unlikely)	210	x 3	630-750
5. Fresh ^{OAK} Yew Acorns (Item 4, Col 1) (Unlikely)	205 180	x 3	615-705 540-600

In the above Table, the 'ceilings' reflected by the right-hand sub-column in Column 3 have been deliberately raised somewhat in order to more than cover any conceivable margin of error in the Laboratory findings, a step which is not believed to be necessary but which has been taken in order to preclude the slightest risk of unfairness, as regards the additional findings which follow below in the present Report. Furthermore, although the 5 ceilings shown above are interesting as a sort of 'panoramic picture', only the highest one of them all -- 1300 Calories -- need be remembered. The others, for reasons which become ~~dismally self-evident~~ ^{dismissally self-evident} below, may be disregarded entirely in connection with the ultimate findings.

In order to compare the 'Chusan-Ryo' findings as to food-values with the nutritional requirements, that is, the energy requirements in calories, for adult males as established by scientific standards, the following texts, and the particular references therein that are indicated below, were consulted by this Investigating officer, at the 406th Medical General Laboratory:

- (A) Book: 'The Chemistry Of Food And Nutrition', by Henry C. Sherman, Ph.D., Sc.D., Mitchell Professor of Chemistry, Columbia, University; Chapter VIII, 'The Fuel Value Of Food And The Energy Requirements Of The Body'; Page 147, under the heading, 'Summary Of Evidence Obtained By Different Methods'.
- (B) Chart: 'Nutritional Charts, Prepared Expressly For The Medical, Dental, and Dietetic Specialists of the Henry Heinz Company, Pittsburgh, Penna.', Table I., Page 5.

However, since the average weight of Occidental adult males is approximately 70 kilograms, and since the Occidental weighs, on the average, more than Orientals, the Chinese Liaison Division, also ATIS, was consulted, and it was ascertained that the average weight for Oriental males is approximately 55 kilograms -- a difference of about 8% less than for Occidentals.

From the above sources, the data shown in the following Table is extracted, for adult Occidental males weighing approximately 70 kilograms. In addition, another column, in which the figures shown are, for safety's sake, 10% less than the figures for Occidentals, has been added in order to show the approximate requirements for Orientals:

Adult Males of Average Weight Kind of Exercise or Work:	Requirements in Calories	
	(70 kg) Occidentals:	(55 kg) Orientals:
(A) 1. Absolute Rest, in Bed, without Food.....	1680	1510
2. Absolute Rest, in Bed, with Food.....	1840	1655
3. Rest in Bed 8 Hrs; Sitting in Chair 16 Hrs.....	2168	1950
(B) 4. Sedentary.....	2500	2250
5. Moderately Active.....	3000	2700
6. Very Active.....	4500	4050

From the foregoing details, it would appear that the number of calories -- that is, the amount of body-fuel, in other words, food -- which the Imported Chinese Laborers in the 'Chusan-Ryo' group received, during the period of time when they were being fed on a diet consisting wholly or approximately of acorn meal alone at the rate of but 3 'mantos' (compressed lumps, the form in which issued for cooking) per head per day, probably amounted to approximately 1100 calories per head per day, and certainly did not exceed an outside total of 1300 calories per head per day.

Such a ration is inhumanly and criminally insufficient in amount (and otherwise deficient), being literally a 'starvation ration', being about 15% less than the number of calories (about 1500) required to supply the minimum body-fuel requirements, or in other words, the minimum necessary to maintain the weight, of an average-sized Oriental invalid prostrate in bed, much less to supply the needs of an able-bodied laborer at hard work. Even an invalid would eventually starve on such a ration.

ROBERT M. PATTERSON
Major, Cavalry,
Division of Investigation,
Legal Section, GHQ, SCAP.

Table - Approximate Maximum Food-Values In Calories. 'Ohusan-Ryo' Exhibit.
Acorn Meal

Items, Remarks & References:	406 MGL, Findings:	3 'Mantos', @ 100 Grams ea:	Approximate Food-Value:
1. Dry-Dehydrated Yew Acorns- (Item 5, Col 3) (Incredible)	410	x 3	1220-1300
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MALES
Kilograms

Years

Centimeters

AGE

HEIGHT

WEIGHT

12

134.0

30.5

13

140.0

34.5

14

148.0

39.0

15

153.0

45.3

16

157.0

49.2

17

159.0

51.6

18

161.0

53.2

19

161.0

54.1

20

161.0

54.5

21

161.0

54.5

22

161.0

54.4

23

162.0

54.3

24

161.0

54.1

FEMALES

Years	Centimeters	Kilograms
AGE	HEIGHT	WEIGHT
12	136.0	31.5
13	141.0	35.9
14	145.0	40.4
15	148.0	43.6
16	149.0	45.9
17	149.0	47.4
18	149.0	48.4
19	149.0	48.8
20	150.0	48.7
21	150.0	48.5
22	150.0	48.4
23	149.0	47.9
24	149.0	47.8