

A Study in The Nutritive Value of Some Special Diets.

by

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Although the problem of proper nutrition has always been of great importance, the scientific study of this subject is comparatively recent. The first food analysis was made in England in 1795. Since that time much progress has been made, and the relation of food to health has made an especial line of study.

Professor Atwater, in the United States, has made extensive food analyses and experiments in nutrition. According to his dietary standards a man at very hard muscular work, requires 5500 calories of fuel value per day. A man at hard muscular work requires 4150 calories, and a man without muscular exercise 2450 calories.

But it is not only necessary to have the proper calorie value, but there must be the proper proportions of the food principles. In normal conditions this ratio varies from 1:5 to 1:7, that is, 1 part of protein to 5 - 7 parts fat and carbohydrate. This ratio is found by multiplying the fat by $2\frac{1}{2}$, adding to carbohydrate and dividing by protein.

The calculation of diets for the sick is a much harder matter. For in this case we are dealing with an abnormal condition, so the foods which in health are in every way desirable, may be the cause of still greater disturbances if they are given. In diseases which are caused by errors in diet, and which can be cured by dieting, there are a few fundamental rules which must be followed:- The diet must be given as prescribed, and given regularly, also those articles of food which aided in producing the disease must be abstained from.

In some diseases, such as tuberculosis, the object of dieting is to build up the system and increase its recuperative power. Consequently all the nourishing food which can be digested and assimilated should be taken. Such foods as fresh milk, fresh meats, fresh vegetables and eggs should be given. Care must be taken however to avoid

indigestion or a disordered stomach, for in that case the object of the diet is defeated and the disease is aided in its course.

On the other hand diseases which have been caused by dietetic errors can usually be cured by a proper regulation of the diet. An example of this is diabetes which has been caused by an excess of sugar and starch in the diet. The cure of this disease is almost entirely dietetic. A diet which is properly balanced, and which is recommended for diabetic patients is as follows:

Breakfast.

Food.	Weights lbs.	Protein	Fat	Carbohydrate	Calories
Smoked salmon	1/8	2.77	1.6	-----	118.78
Kidneys	1/8	1.076	.6	.05	65.00
Bacon	1/8	1.187	7.425	-----	335.625
Brussels sprouts	1/4	.375	.025	.85	23.75
Cocoa	1/4	1.5	1.903	2.428	153.75
Cream	1/32	.625	4.625	1.125	227.5
		7.533	16.178	4.453	924.395

Lunch

Food.	Weights lbs.	Protein	Fat	Carbohydrate	Calories
Roast goose	1/4	4.075	7.05	-----	457.5
Baked custard	1/4	2.6312	4.0812	8.75	385.31
Green fruit	1/4	.275	.025	5.275	103.75
Brie cheese	1/8	1.976	2.62	.176	151.25
		8.9572	16.7762	14.201	1097.81

Food.	Weights lbs.	Dinner			Calories
		Protein	Fat	Carbohydrate	
Celery soup	1/2	1.05	1.4	2.5	125
Steak	1/4	5.525	.775	---	135
Raw tomatoes	1/8	.112	.05	.48	13.12
Cream	1/32	.625	4.625	1.125	227.5
		7.312	6.850	4.105	502.62

Total for day:

Protein	Fat	Carbohydrate	Calories
23.7927	39.8042	22.759	1624.825

Nutritive Ratio 1 : 5

Recipes.

Smoked Salmon.

Soak fish 1/2 hour in cold water, cover with hot water and let stand 15 minutes, drain and wipe dry. Brush over with butter and boil gently for fifteen minutes. Turn on hot platter, dot with bits of butter, and garnish with parsley.

Cocoa.

1 tspn. cocoa	1 c. boiling milk
1 c. boiling water	1 tblspn. sugar

Custard.

1/2 pint milk	1 tspn. sugar
1 egg yolk	

Green Fruit.

Preserved and sweetened with saccharine, one tablet to a pint.

Celery Soup.

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|------------------|-----------------|
| 1 head of celery | 1 tblspn. flour |
| 1 P.S. of water | 1/2 tspn. salt |
| 1 P.S. of milk | pepper |
| 1 tblspn. butter | |

Use 1/4 of
recipe.

Steak.

1/2 lb. carefully broiled.

Tomatoes .

Cut fresh tomatoes in half. Place on ice until slightly frozen. Whip a teaspoon of cream and season with salt and pepper. Ice and place on cut surface of tomato and serve.

Here the carbohydrate is reduced very greatly. The custard which was served for dinner was thoroughly baked. The green fruit is preserved as other fruit and sweetened with saccharine.

To show the reduction in carbohydrate we can compare the tables given for a normal diet for a family at moderate work. The average per person was .-

Protein	Fat	Carbohydrate	Calories
89	124	453	3415

When we compare the table for the diet,-

23.7929,	39.8042,	22.759,	1624.825
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We can readily see the decrease in the per cent of carbohydrate. An abstinence from nearly all starchy foods is necessary. Yet this is almost impossible. Saccharine which has quite recently been discovered is of great value to diabetic patients, taking the place of sugar in the diet. All starchy foods such as toast and puddings and custards,

if given should be thoroughly baked, and in the case of the toast thoroughly dextrinized.

There are four principles which must be kept in mind when preparing a menu for a diabetic. First, to exclude starch and sugar - Second, to supply their place by fat so there will be no lack of energy producing food. Third, to make the meals digestible, as a weakened digestion is a frequent accompaniment of diabetes. Fourth, to make the food as appetizing as possible. Cream may be used in place of milk, as cream contains but little lactose. More fat may be added by the use of olives and cream cheese.

Another disease caused by errors in diet is gout. The first cause is overeating and a too great per cent of nitrogenous food. All foods which are hard to digest should be avoided. Menus for three days, which are of value, are as follows:

1st day.

Breakfast.

Food	Amount lbs.	Protein	Fat	Carbohydrate	Calories
1 Boiled egg	1/8	1.54	.025	-----	31.25
Dry toast	1/12	1.04	.132	5.10	118.34
Cocoa	1/4	1.5	1.903	2.428	153.75
		4.05	2.06	7.528	303.34

Lunch

Food	Amount lbs.	Protein	Fat	Carbohydrate	Calories
Baked apple	1/8	.085	.085	2.7	55
Custard	1/4	2.6312	4.0812	8.75	385.31
		2.7162	4.1662	11.45	440.31

Dinner

Food	Amount lbs.	Protein	Fat	Carbohydrate	Calories
Tomato soup	1/4	6.0	5.5	2.8	92.5
Roast chicken	1/2	2.412	2.03	---	130.62
Asparagus	1/4	3.75	.025	.7	21.25
		12.162	7.555	3.5	244.37

2nd day.

Breakfast.

Food	Amount lbs.	Protein	Fat	Carbohydrate	Calories
Grilled sole	1/8	2.962	.818	----	89.35
Butter	1/96	.001	.885	----	37.23
Toast	1/12	1.04	.132	5.10	118.34
		4.003	1.835	5.10	244.92

Lunch.

Food	Amount lbs.	Protein	Fat	Carbohydrate	Calories
Stewed cabbage	1/8	.2	.037	.562	18.125
Stilton cheese	1/16	1.96	1.025	1.37	82.5
Rusks	1/8	1.975	1.175	11.5325	301.25
		4.135	2.237	13.4645	401.875

Dinner.

Food	Amount lbs.	Protein	Fat	Carbohydrate	Calories
Whitton cutlets	1/4	5.925	4.625	----	306.25
Beans	1/16	1.406	.112	3.725	100.3125
Junket	1/4	.825	1.0	1.25	81.25
		8.156	5.737	4.975	487.8125

3rd day.

Breakfast.

Food	Amount lbs.	Protein	Fat	Carbohydrate	Calories
2 eggs	1/4	3.08	.05	-----	62.5
Butter	1/96	.001	.885	-----	37.23
Apple	1/8	.085	.082	2.7	55.0
Toast	1/12	1.04	.132	5.10	118.34
Coffee	1/4	.15	1.15	3.305	175.025
		4.356	2.302	11.105	348.095

Lunch.

Food	Amount lbs.	Protein	Fat	Carbohydrate	Calories
Artichoke soup	1/5	.312	.4	.687	35.625
Sardines	1/8	2.875	2.462	----	157.5
Toast	1/12	1.04	.132	5.10	118.34
		4.227	2.994	5.787	311.465

Dinner.

Food	Amount lbs.	Protein	Fat	Carbohydrate	Calories
Raw oysters	1/8	.75	.162	.4162	28.75
Roast beef	1/4	5.525	.775	-----	135.0
Roast potatoes	1/8	.3125	.0125	2.6125	55.0
Rhubarb	1/8	.075	.0875	.45	14.125
Cream	1/32	.625	4.625	1.125	227.5
		7.2875	5.662	4.5037	460.375

Total value for first day:-

Protein	Fat	Carbohydrate	Calories
18.9282	13.7812	22.478	988.02

Nutritive Ratio 1:3+

For second day:-

Protein	Fat	Carbohydrate	Calories
16.294	9.809	23.5395	1133.5075

Nutritive Ratio 1:3

For third day:-

Protein	Fat	Carbohydrate	Calories
9.8705	10.968	21.3957	1119.935

Nutritive Ratio 1:4

Here a decrease is shown in the proteid and an increase in the carbohydrate.

Recipes.

1 pint stewed tomatoes	Tomato soup.	salt
1 pint white sauce		pepper

1/8 recipe

Asparagus.

Boil the asparagus until tender. Season and serve around chicken, as a garnish.

Rusks.

Bake sponge cake batter in sheets 1/2 inch thick. Cut in squares and toast. Serve four squares.

Beans.

Boil in salted water until tender - add butter and seasoning.

Junket

- 1 pint milk
 - 1 rennet tablet
 - 1 tblspn. sugar
- Set in a warm place until coagulated.

Rhubarb.

Cut into small pieces, leaving the skin on. To each two cups of rhubarb add 1 cup of sugar and cover. Allow to stand at back of stove until sugar is melted, then cook gently until tender.

Care must be taken in arranging special diets to eliminate those foods which tend to aggravate the disease, and still give the patient sufficient nutriment, not only to maintain life, but to build up the waste caused by the disease. It is a mistake to think that because one is ill they must not eat.

When a patient is confined to a chair or to bed, there will not be a need for so much energy, hence the decrease in the calorie value. A liquid diet, which is given in severe cases, is as follows:-

	Protein	Fat	Carbohydrate	Calories
8 A.M.				
3/4 c. milk	1.2375	1.50	1.875	121.875
10 A.M.				
1/2 c. coffee	.075	.575	1.6525	87.5125
12 M.				
2 tblspn. beef juice	5.2	2.821	----	216.25
2 P.M.				
3/4 c. milk	1.2375	1.50	1.875	121.875
4 P.M.				
wine whey	.25	.75	1.25	31.125
<u>6</u> P.M.				
3/4 c. milk	1.2375	1.50	1.875	121.875
8 P.M.				
hot cocoa 1/2 c.	1.025	1.427	4.131	144.375

This gives us a total of -

Protein	Fat	Carbohydrate	Calories
10.2525	10.073	12.6585	844.7775

Nutritive Ratio 1:3.7

Two other diets in actual use in hospitals are as follows: (These diets are from the hospital at South McAlester, Oklahoma.)

First.

	Protein	Fat	Carbohydrate	Calories
8 A.M.				
Oatmeal gruel	.6	.2	3.15	77.5
12 M.				
Beef broth	2.45	.3	-----	5.75
4 P.M.				
Egg nog	2.365	1.025	7.50	151.25
8 P.M.				
Egg lemonade	.925	.241	26.66	281.66
12 M.				
Buttermilk	.15	.25	2.4	82.5
4 A.M.				
Buttermilk	.15	.25	2.4	82.5

	<u>Second.</u>			
	Protein	Fat	Carbohydrate	Calories
7:30 A.M.				
Oatmeal gruel	.6	.2	3.15	77.5
10 A.M.				
Egg lemonade	.925	.241	26.66	281.66
12:30 P.M.				
Beef broth	2.45	.3	-----	57.5
3 P.M.				
Buttermilk	.15	.25	2.4	82.5
5:30 P.M.				
Beef broth	2.45	.3	-----	57.5
10 P.M.				
Egg nog	2.365	1.025	7.50	151.25
3 A.M.				
Buttermilk	.15	.25	2.4	82.5

Totals.	Protein	Fat	Carbohydrate	Calories
First	6.640	2.276	42.11	732.91
		Nutritive Ratio 1:7.1		
Second	9.09	2.566	44.11	790.41
		Nutritive Ratio 1:5.6+		

Recipes.

Beef juice .

Select 1/2 pound lean beef, remove all fat, bone, and gristle. Cut into cubes, place in glass jar, cover and heat in sauce pan of cold water, for one hour. Do not allow the temperature to exceed 160°F. Strain out juice and press meat. The juice should be clear red, not brown and flaky. Add salt, and serve. 1/2 pound of beef

will make 4 tblspns. of juice.

Wine whey

Heat 1 c. of milk 100°F. Add 1/2 c. sherry wine. When coagulated strain and serve.

Egg nog

1 egg 2 tspns sugar
1 c. milk 1 or 2 tblspns brandy

Egg lemonade

1 lemon 1 c. water
1-1/2 tblspns sugar 1 beaten egg white

Milk punch

1 cup milk 1 tspn. sugar
2 tblspns brandy nutmeg

Use 1/2 recipe

Oyster soup

1 c. fresh oysters 1 salt spn. salt
1 c. milk speck pepper
4 tblspns cracker crumbs 1/4 tblspn. butter

Use 1/2 recipe.

Beef broth

1 lb. meat salt
1 qt. cold water pepper

Use 1/4 recipe.

Wine Jelly

1/4 box gelatine 1/2 cup sugar
1/4 cup cold water 1/2 cup sherry wine
1-1/4 c. boiling water

Use 1/4 recipe.

Milk toast

1 c. hot milk 3 slices toast
salt a little butter if desired.

Such diets as these are given in severe and dangerous cases. The last three are of special value for typhoid fever patients. After the patient has partially recovered the diet is changed from the liquid to a 'light' diet, which consists of everything in a liquid diet and in addition, fruit, cooked eggs, toast, and soups.

A light diet which has been used with good results is as follows:-

First day.

	Protein	Breakfast. Fat	Carbohydrate	Calories
1 egg	1.54	.025	----	31.25
3 slices toast	1.04	.132	5.10	118.34
Lunch.				
Milk punch	1.65	2.0	8.75	201.25
Dinner.				
3/4 c. oyster soup	1.5	.325	.825	57.5
1/4 lb. cream crackers	1.2125	1.512	8.712	248.75
Lunch.				
1/2 c. Beef broth	2.45	.3	-----	57.5
Supper.				
Milk toast	.93	.566	3.175	99.795
Wine jelly	1.39	----	25.0	490.93
Tea	.15	1.15	3.305	175.025

Second day.

Breakfast.

	Protein	Fat	Carbohydrate	Calories
1 egg	1.54	.025	-----	31.25
Milk toast	.93	.566	3.175	99.795
Coffee	<u>.15</u>	<u>1.15</u>	<u>3.305</u>	<u>175.025</u>
	2.62	1.741	6.480	246.07

Lunch.

1 c. soft custard	2.6312	4.0812	8.75	385.31
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Dinner.

Cream of celery soup	1.05	1.4	2.5	125.0
Sippets	1.04	.132	5.10	118.34
Barley pudding	3.677	1.1705	12.05	341.44
Cream	<u>.625</u>	<u>4.625</u>	<u>1.125</u>	<u>227.5</u>
	6.392	6.3275	20.775	812.28

Lunch.

Milk punch	1.65	2.0	33.7	220.62
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Supper.

Water toast and butter	1.05	1.017	5.10	155.57
Wine jelly	1.39	-----	25.0	490.93
Tea	<u>.15</u>	<u>1.15</u>	<u>3.305</u>	<u>175.025</u>
	2.59	2.167	33.405	821.525

Third day.

Breakfast.

	Protein	Fat	Carbohydrate	Calories
Scrambled egg	1.5406	1.908	.140	113.44
Cream toast	.93	.566	3.175	99.795
Cocoa	1.5	1.903	5.511	192.50

Lunch.

Chicken broth	1.8	.05	.075	.50
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Dinner.

Chicken panada	6.037	3.481	4.1685	336.5628
Bread	1.162	1.50	6.587	150.625
Tapioca cream	.825	7.0	7.05	180.

Lunch.

Egg nog	2.365	1.025	7.50	151.25
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Supper.

Toast & butter	1.041	1.007	5.10	155.57
Baked sweet apples	.085	.085	2.7	55.0
Cream	.625	4.625	1.125	227.5
Tea	.15	1.15	3.305	175.025

Total for first day:-

Protein	Fat	Carbohydrate	Calories
11.8625	16.01	54.767	1478.34

Nutritive Ratio 1:7.9+

" for second day:-

15.6832	17.3167	101.110	2486.835
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Nutritive Ratio 1:9

Total for third day:-

Protein	Fat	Carbohydrate	Calories
17.9606	16.750	46.453	1786.2575

Nutritive Ratio 1:6

Recipes.

Barley pudding.

2 tblspn. barley flour	1 c. boiling water
1 tblspn. sugar	1/2 c. milk
1 salt spoon salt	whites of 3 eggs

serve with cream
Use 1/4 recipe.

Milk punch.

1 c. milk	1 tspn. sugar
2 tblspns brandy	nutmeg

Chicken panada.

1 c. chicken meat	1/2 c. bread soaked in milk
1 pint chicken broth	1/2 tspn. salt
1/4 salt spoon pepper	

Use 1/4 recipe.

Tapioca cream.

1/4 c. tapioca	3 tblspns sugar
1/4 c. cold water	1 salt spoon salt
1 pint milk	2 eggs

Use 1/4 recipe.

Here the calorie value is higher, because the patients have more exercise and the body is using more energy. The convalescent' diet increases the calorie value gradually until the normal dietary standard is reached, and the patient is entirely recovered from the disease and

its effects. There is no fixed standard for such diets, as it varies with each individual case. Yet a general knowledge of the subject is necessary to every one who has to care for the sick or convalescent.

A patient confined to bed will be warm from surroundings, so will require less heat producing foods, i.e., less fat and carbohydrate. Probably having undergone loss of blood or loss of muscle as the result of fever, a greater proportion of proteid than normally used should be given. Lest the kidneys be overtaxed in the elimination of this extra proteid waste it is always well to use milk to as great an extent as possible as a source of proteid.

Because of inactivity the patient will lack the stimulus to digestion that comes from exercise, therefore the food must be so prepared that it will be easy of digestion. For the same reasons as given above small quantities at short intervals will give better results than larger quantities given less often.