

How to Choose a Protein Source

The most important thing to consider when selecting a protein source for a meal is what type of fat is in the protein. You want a source either low in fat or, even better, one high in unsaturated fat. Unfortunately, one of the top protein sources in this regard (fish) is increasingly contaminated by mercury, so that there are few “ideal” protein sources left. Mackerel, for example, has as high an omega-3 fat content as salmon and sardines, but is extremely high in mercury and should be avoided.

Protein value in terms of fat and toxin content

Best: High in healthy (unsaturated) fat
Good: Low in fat
Ok: Moderate in saturated fat
Not so good: High in saturated fat
Worst: High in mercury, toxins or (in the long-term for the environment) hormones

The next thing to think about is the bio-availability of the protein itself. If a protein source is not very bio-available, you need to eat more of it to meet your body’s protein needs.

Protein value in terms of bio-availability

Best: Meat, fish, poultry, dairy, eggs, tofu
Good: Lentils and beans
Not so good: Fruit, vegetables and grains

The best protein sources are those that simultaneously have a high bio-availability, a good fat profile (low in fat or high in unsaturated fat) and are low in toxins. Hormone treatment results in a less natural animal and therefore meat of questionable health value, but thus far there are no documented ill health effects from hormone-treated beef or poultry. The negative environment impact of excreted hormones from such animals is documented and is the topic of much current research, making hormone-treatment more of an environmental issue than a personal health issue at present. Of course there is ultimately no such thing as a negative environmental impact without a negative health impact on all of us.

Protein value in terms of everything (see next page for more detailed information)

Ordered from lowest to highest calories needing to be consumed to meet your protein needs

Best: Wild (including canned) salmon, sardines, tofu, oysters
Good: Some fish (listed on the next page), chicken and turkey light meat, light tofu,
Fair: Shrimp, egg whites, clams, wild meats (e.g. venison), non-fat dairy
Chicken and turkey dark meat, low-fat cottage cheese, 1%-fat milk,
Top round (London broil) beef, pork loin, lean ham
Not so good: Pork (average cuts including pork chop), 2%-fat milk, whole eggs,
Beef (average cuts), lamb, ribs (beef, pork), salami, hot dogs (beef, pork)

Why you should target 70-90 Cal protein/meal

Regardless of how many calories you need to eat in the day, the number of calories you eat at any one sitting should not exceed 600-700 Calories, with an average of 500 Calories per meal being optimal. Since you want 10-25%, or an average of 17%, of your calories in a meal to come from protein, you want about 85 Calories of protein in each meal. After accounting for the small amount of protein in grains, fruits and vegetables, you still need 70 Calories of protein added for a 500-Calorie meal, or 90 Calories of protein for a 600-Calorie meal. For this reason, I have listed the amounts of the protein sources on this and the next page in terms of how much you would need to get 70-90 Calories of protein. Note that if you use the RDA (Recommended Daily Allowance) guidelines for total caloric intake (based on gender, age and body weight) and the recommended protein intake (based on weight), you almost always get numbers that correspond to 17% of total calories needing to come from protein, which exactly matches my protein recommendations. My recommendations, however, are based on 17% being the mid-range between the lower limit (10%) for proper body function and health, and the upper limit of 25% above which negative side effects (see section V).

ALL PROTEIN SOURCES SHOWN TO HAVE LESS THAN 0.02 PPM MERCURY AND THE LOWEST LEVELS OF CARCINOGENS ARE LISTED IN THE FOLLOWING CHARTS.

The Best Protein Sources

High in unsaturated fat, low in toxins, high protein bio-availability

Fish and soy are high in both protein and unsaturated fats, providing your body two key elements of meal composition simultaneously. Only buy reduced-fat soy products if you are adding other sources of fat to your meals since the fat in soy is healthy. North Atlantic Mackerel has only 5 times the mercury (0.05) and just as much omega-3 fat as salmon so that can be part of your diet once in a while as well.

To get 70-90 Cal protein in a meal:

Protein source	amount	total Cal	fat Cal	sat fat Cal	Ω-3 Cal
Wild, canned Salmon	3 oz	127	36	10	20
Sardines (in tomato)	3.5 oz can	150	72	12	17
Sardines (in oil)	3 oz can	177	90	12	17
Tofu, firm*	9 oz*	180	100	15	9
31 oysters	12 oz can	188	63	18	20
Non-sweet soy milk	2 cups	254	85	11	8

***Any type of tofu is great, but eat 7 oz of extra firm, 9 oz of firm or 11 oz of soft tofu**

The firmness of tofu is changed by varying the amount of water in it, meaning that soft tofu contains more water and less soy per ounce and extra firm contains less water and more soy per ounce (a block of extra firm gives you more actual soy for about the same price as a block of soft tofu). Since the amount of water is the only real difference, 7 oz of extra firm, 9 oz of firm and 11 oz of soft tofu all have nearly identical nutritional

values (the values shown above for 9 oz of firm tofu). This is more tofu (about ½ block, more for soft tofu) than most people eat in a meal, but you should eat at LEAST half this amount.

Good Protein Sources

Low in fat, low in toxins, high protein bio-availability

Due to mercury contamination, there are many low-fat fish that should be eaten only in moderation and infrequently (see mercury-in-fish discussion in this Section).

To get 70-90 Cal protein in a meal:

Protein source	amount	total Cal	fat Cal	sat fat Cal
Hake fish	3 oz	75	17	3
Whiting fish	3 oz	77	10	2
Ocean perch	3 oz	80	13	2
Tilapia	3 oz	81	14	5
Chicken, white meat	3 oz	96	14	3
Turkey, white meat	3 oz	96	11	3
Tofu light, firm	10	100	18	0
Shrimp	4 oz	100	10	2
Egg whites (medium)	4	120	0	0
Clams	3 oz	126	15	2
Wild meat (venison)	3 oz	127	18	9
Non-fat milk	2 cups	172	0	0
Non-fat plain yogurt	1.3 cups	183	0	0

Fair Protein Sources

Keep intake of these moderate: Protein medium-high in saturated fat

To get 70-90 Cal protein in a meal:

Protein source	amount	total Cal	fat Cal	sat fat Cal
Turkey, dark meat	3 oz	105	32	11
Chicken, dark meat	3 oz	115	32	8
Low-fat cott. Cheese	¾ cup	150	30	20
Lean beef (top round)	3 oz	161	45	15
Lean pork (loin), ham	3 oz	165	54	19
1% milk	2 cups	220	36	27

Less-Healthy Protein Sources

KEEP INTAKE OF THESE LOW: Protein sources high in saturated fat, low toxins

Most beef, pork, dairy, eggs if they include the yolks and anything cooked with the skin (such as chicken) are relatively high in saturated fat. A limited amount of these food sources in the diet is ok, but regular daily intake is not. Do not eat more than 10% of your total calories per day (and preferably even in any one meal) as saturated fat. Since a meal should average about 600-700 Calories, with 500 Calories being the ideal, 50-70 Calories of saturated fat per meal should be the limit. That means meals that have pork, 2% milk, whole eggs, beef or lamb should be limited to the amounts shown below and should NOT have any cheese or desert included in that meal. Clearly ribs (pork or beef), salami and hot dogs (pork or beef) should not be used as ones protein source except on rare occasion, in limited amounts and always with other healthy foods like salad, an additional side of vegetables, and whole grains. Rib meals in restaurants are not well designed since they average well over 1000 Calories and consist almost entirely of refined carbohydrate, saturated fat and if you order a salad you get ice-berg covered in dressing and cheese.

To get 70-90 Cal protein in a meal:

<u>Protein source</u>	<u>amount</u>	<u>total Cal</u>	<u>fat Cal</u>	<u>sat fat Cal</u>
Pork average, chop	3 oz	214	117	40
2% milk	2 cups (16 oz)	244	90	54
Whole eggs (medium)	4	266	144	51
Beef	3 oz	232	135	52
Lamb	3 oz	250	162	68
Pork ribs (2)	3 oz	338	234	86
Salami	3 oz	361	279	100
Beef ribs (2, trimmed)	3 oz	401	324	136
Pork & beef hot dogs	4 dogs	540	430	180

Other Protein Sources: Legumes (lentils, beans, etc)

Lentils and beans are about 30% protein by total calories, assuming no fat has been added such as in most refried beans. The bio-availability of lentils, beans and other legumes is about 50% (tofu is 75%, dairy and meats 80-90%), so you need to eat 1.5-2 times as much lentils and beans as you would soy, non-fat dairy, egg whites, fish or lean meats to get your protein needs. Since the RDA for protein intake in our 150-lb person example is 55 g protein but the RDA assumes half of the protein consumed if highly bio-available and the other half is not, the protein needs of a 150 lb person eating only lentils and beans as their protein source is about 65 grams, or 260 Calories of protein per day. You would need to eat

- Just over 700 Calories of lentils each day, corresponding to just over 1 cup dry lentils, or nearly 1 quart of cooked lentils (thick, not dilute like lentil soup), or
- Just over 800 Calories, or over 2.5 cans, of non-fat beans.

These amounts might increase your physical health, but not your social health.

Grains, Fruit and Vegetables Are Not Enough

Using the same example as above (a 150 lb person requiring 260 Calories of protein per day from 50% bio-available protein sources), since the % calories from protein in vegetables is about 10-30%, in grain is about 10% and in fruit is 5-10%, and all of them are 50% bio-available, you would need

- 1,300 Calories of vegetables (32 cups of broccoli or kale, 65 cups of cabbage or carrots)
or
- 2,600 Calories of grain (20-30 slices of bread) or
- 3,500 Calories of fruit (33 large bananas, 65 pears or 33 cups of cherries).

Nuts and Cheese are Not Good Protein Sources

The amount of protein relative to total calories is about 15% in nuts and 25% in cheese, meaning that you would need about 1600 Calories of nuts or nut butter (1400 Calories of healthy fat), or about 1100 Calories of cheese (800 Calories of fat, 500 of which is saturated). While the nut products are healthy and the cheese is not (unless eaten in moderation so you do not exceed 10% of your calories as saturated fat), both are too high in calories to be used as an effective protein source.