INE | INSTITUTE OF NUTRITIONAL ENDOCRINOLOGY

Macronutrients: Protein Sources in the Diet

Dr. Ritamarie Loscalzo

Medical Disclaimer: The information in this presentation is not intended to replace a one-on-one relationship with a qualified health care professional, and is not intended as medical advice. It is intended as a sharing of knowledge and information from the research and experience of Dr. Ritamarie Loscalzo, drritamarie.com, and the experts who have contributed. We encourage you to make your own health care decisions based upon your research and in partnership with a qualified health care professional.

What Factors Might Contribute to a Deficiency of Protein?

- ✓ Low hydrochloric acid
- ✓ Deficient pancreatic enzymes
- ✓ Poor liver function: controls amino acid metabolism
- ✓ Vitamin B6 deficiency can impair the ability of the body to manufacture non-essential amino acids

- ✓ Bacterial or viral infections and severe physical trauma use up their protein stores rapidly

Protein Recommendations

- ✓ **RDA:** 0.36 grams per pound
- ✓ **Athletes:** 0.6 - 0.9 grams per pound
- ✓ **Paleo:** 1 gram per pound
- ✓ **Zone:** 30% of calories
- ✓ **According to Web MD**
  - Infants: about 10 grams a day
  - Teenage boys: up to 52 grams a day
  - Teenage girls: 46 grams a day
  - Adult men: 56 grams a day
  - Adult women: 46 grams a day
  - Pregnant or lactating women: 71 grams a day

How Does Cooking Affect Protein?

- ✓ **Heating and beating** causes denaturation and coagulation
- ✓ **Denaturation** changes the shape of the protein and decreases solubility

- ✓ **Coagulation** causes protein molecules to clump together
- ✓ **Overcooking** foods destroys heat sensitive amino acids, i.e., lysine, and makes protein resistant to digestive enzymes

When is Higher Protein Needed?

- ✓ Muscle wasting
- ✓ Weight loss
- ✓ Fatigue and weakness
- ✓ Frequent infections
- ✓ Severe edema (fluid retention)

- ✓ Slow growth and development in children
- ✓ Severe trauma
- ✓ Burns
- ✓ Competitive athletics

Assessing Protein Status

- ✓ Assess protein intake and sufficiency
- ✓ Assess adequacy of stomach acid
- ✓ Assess pancreatic enzyme status
- ✓ Look for signs of neurotransmitter imbalance
- ✓ Assess hormone adequacy
- ✓ Look at healing and immune issues
- ✓ Clues to vitamin and mineral status
- ✓ Blood and urine tests

Blood Assessment of Protein Status

✓ Blood test indicators of low protein

- Protein (lo)
- Albumin (lo)
- Globulin (lo)
- BUN (lo)
- Creatinine (lo)
- Uric Acid (lo)

✓ Blood test indicators of low stomach acid

- Calcium (lo)
- Iron (lo)
- BUN (hi or lo)
- Chloride (lo)
- Carbon Dioxide (hi)
- Hemoglobin (lo)
- MCV (hi)
- MCH (hi)
- MCHC (hi)
- Phosphorus (lo)
- Protein (lo)
- Albumin (lo)
- Globulin (hi)

Protein in Animal Flesh

Food	Serving Size	Cals	Amount (g)	World's Healthiest Foods Rating
Tuna	4 oz	147.4	33.06	excellent
Cod	4 oz	96.4	21.24	excellent
Chicken	4 oz	187.1	35.18	very good
Turkey	4 oz	166.7	34.17	very good
Soybeans	1 cup	297.6	28.62	very good
Salmon	4 oz	157.6	26.59	very good
Beef	4 oz	132.7	26.16	very good
Shrimp	4 oz	134.9	25.83	very good
Lamb	4 oz	350.4	25.57	very good
Scallops	4 oz	125.9	23.29	very good
Sardines	3.20 oz	188.7	22.33	very good

www.whfoods.com

Protein in Dairy and Eggs

Food	Serving Size	Cals	Amount (g)	World's Healthiest Foods Rating
Yogurt	1 cup	149.4	8.50	good
Cheese	1 oz	114.2	7.06	good
Eggs	1 each	77.5	6.29	good
Cow's milk	4 oz	74.4	3.84	good

www.whfoods.com

Protein in Legumes

Food	Serving Size	Cals	Amount (g)	World's Healthiest Foods Rating
Miso	4 oz	164.4	17.89	very good
Soy Sauce	4 oz	222.3	20.63	good
Lentils	1 cup	229.7	17.86	good
Dried Peas	1 cup	231.3	16.35	good
Pinto Beans	1 cup	244.5	15.41	good
Kidney Beans	1 cup	224.8	15.35	good
Black Beans	1 cup	227.0	15.24	good
Navy Beans	1 cup	254.8	14.98	good
Lima Beans	1 cup	216.2	14.66	good
Garbanzo Beans	1 cup	269.0	14.53	good

www.whfoods.com

Protein in Vegetables

Food	Serving Size	Cals	Amount (g)	World's Healthiest Foods Rating
Spinach	1 cup	41.4	5.35	very good
Asparagus	1 cup	39.6	4.32	very good
Mustard Greens	1 cup	36.4	3.58	very good
Swiss Chard	1 cup	35.0	3.29	very good
Bok Choy	1 cup	20.4	2.65	very good
Pumpkin Seeds	0.25 cup	180.3	9.75	good
Green Peas	1 cup	115.7	7.38	good
Collard Greens	1 cup	62.7	5.15	good
Brussels Sprouts	1 cup	56.2	3.98	good
Broccoli	1 cup	54.6	3.71	good
Kale	1 cup	36.4	2.47	good
Green Beans	1 cup	43.8	2.36	good
Cauliflower	1 cup	28.5	2.28	good
Cabbage	1 cup	43.5	2.27	good
Sea Vegetables	1 TBS	10.8	1.81	good
Mushrooms, Crimini	1 cup	15.8	1.80	good
Turnip Greens	1 cup	28.8	1.64	good
Summer Squash	1 cup	36.0	1.64	good
Tomatoes	1 cup	32.4	1.58	good

Protein in Nuts and Seeds

- ✓ **Almonds:** 15% carbs, 13% protein, 72% fat
- ✓ **Cashews:** 22% carbs, 11.5% protein, 66.5% fat
- ✓ **Walnuts:** 8.5% carbs, 8% protein, 83.5% fat
- ✓ **Pecans:** 8% carbs, 5% protein, 87% fat
- ✓ **Flax seeds:** 22% carbs, 12% protein, 66% fat
- ✓ **Pumpkin seeds:** 13% carbs, 16% protein, 71% fat
- ✓ **Sesame seeds:** 17% carbs, 11% protein, 72% fat
- ✓ **Sunflower seeds:** 17% carbs, 11.5% protein, 71.5% fat

http://www.healthyeatingstartshere.com/nutrition/protein-in-nuts

Protein in Nuts and Seeds

Nut/Seed (1/4 Cup; 4 tbs)	Protein (g)
Chia Seed	12
Hemp Seed	10
Flax Seed	8
Sunflower Seed	8
Salba	7.4
Almond	7
Pumpkin Seed	7
Sesame Seed	7
Pistachio	6
Walnut	5
Brazil Nut	5
Hazelnut	5
Pine Nut	4
Cashew	4

Protein in Grains

- ✓ **Buckwheat:** 82% carbs, 12% protein, 6% fat
- ✓ **Millet:** 82% carbs, 11% protein, 7% fat
- ✓ **Oats:** 70% carbs, 15% protein, 15% fat
- ✓ **Quinoa:** 70% carbs, 15% protein, 15% fat

http://www.healthyeatingstartshere.com/nutrition/protein-in-nuts

Protein in Legumes

- ✓ **Split peas:** 73% carbs, 24.5% protein, 2.5% fat
- ✓ **Lentils:** 70% carbs, 27% protein, 3% fat
- ✓ **Aduki beans:** 79% carbs, 20% protein, 1% fat
- ✓ **Kidney beans:** 73% carbs, 24% protein, 3% fat

http://www.healthyeatingstartshere.com/nutrition/protein-in-nuts

Protein in Vegetables

- ✓ **Asparagus:** 68% carbs, 27% protein, 5% fat
- ✓ **Beets:** 86% carbs, 11% protein, 3% fat
- ✓ **Mushrooms:** 50% carbs, 37% protein, 13% fat
- ✓ **Broccoli:** 71% carbs, 20% protein, 9% fat
- ✓ **Zucchini:** 72% carbs, 18.5% protein, 9.5% fat

http://www.healthyeatingstartshere.com/nutrition/protein-in-nuts