

Healthy Food, Better Mood:
Nutritional Treatments for Depressions
Depression the Way Out
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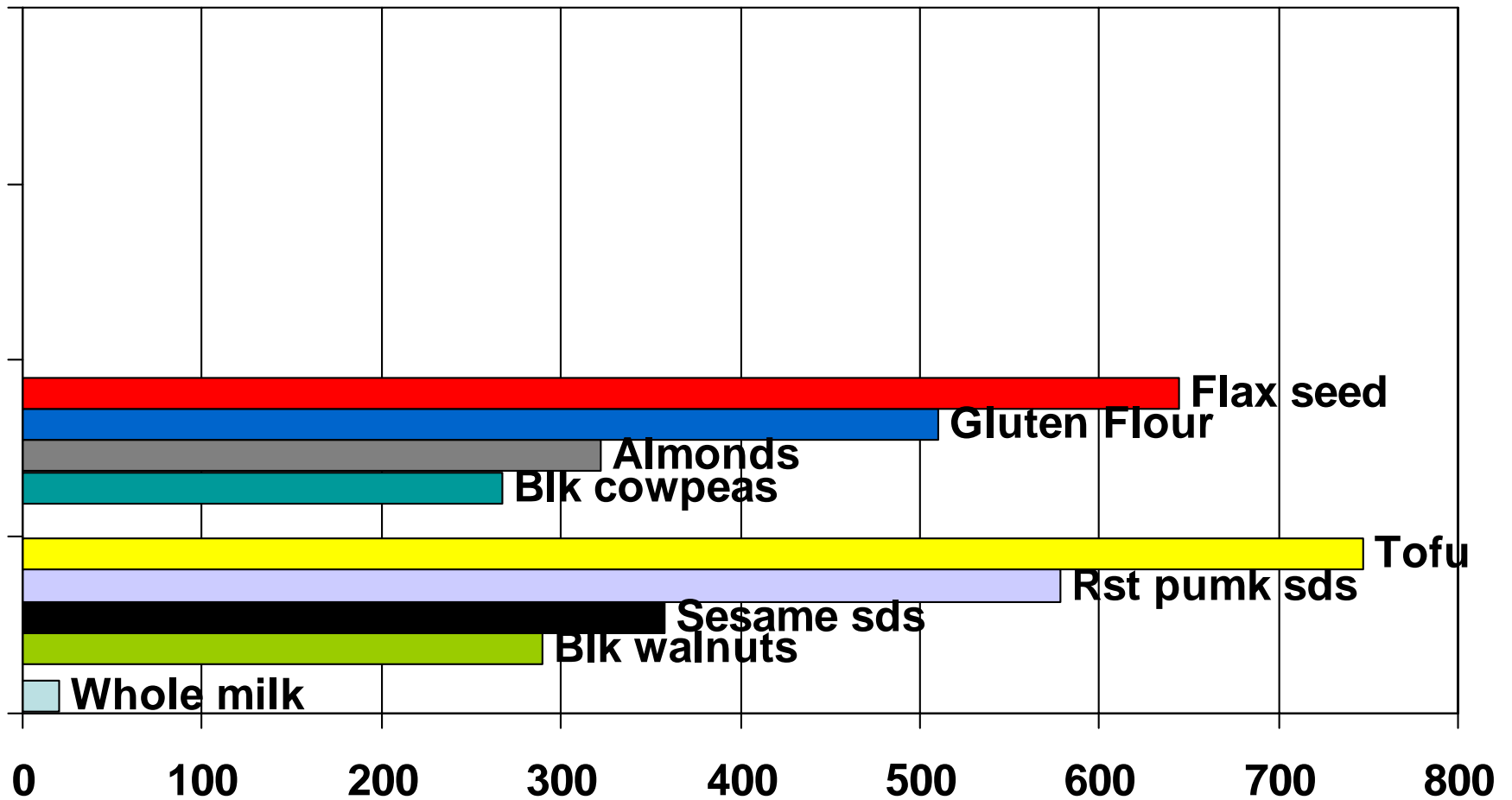
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Importance of Serotonin

- Brain can make no serotonin unless tryptophan is present
- Most depressed pt have reduced appetite¹
- They should eat foods rich in tryptophan²
 - See figure 1²
- Some depressed individuals are very sensitive to even a small temporary reduction in tryptophan
 - Missing just 1 day of moderate to high tryptophan can cause relapse in such people

Tryptophan Content of Foods

Figure 1

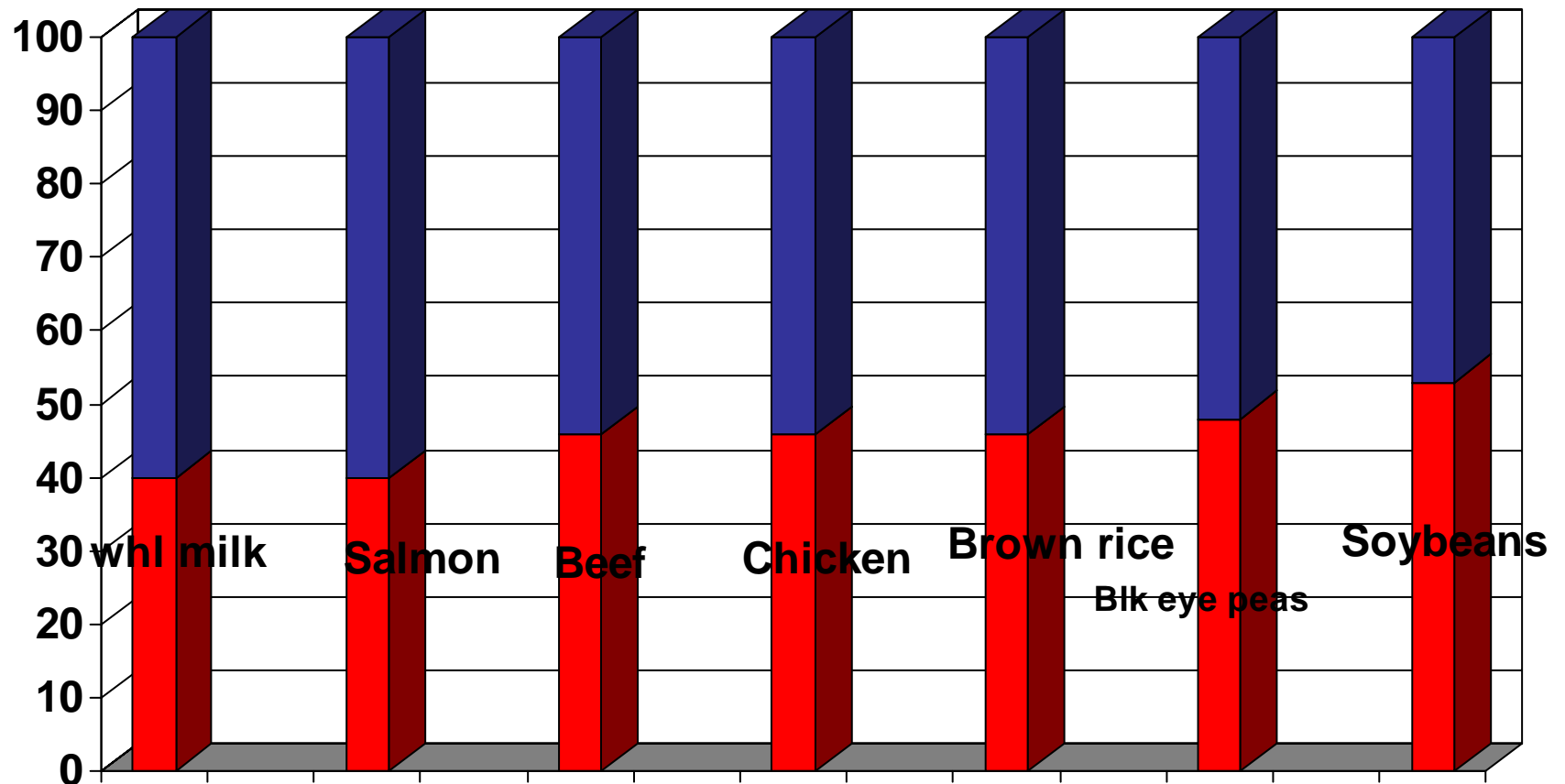


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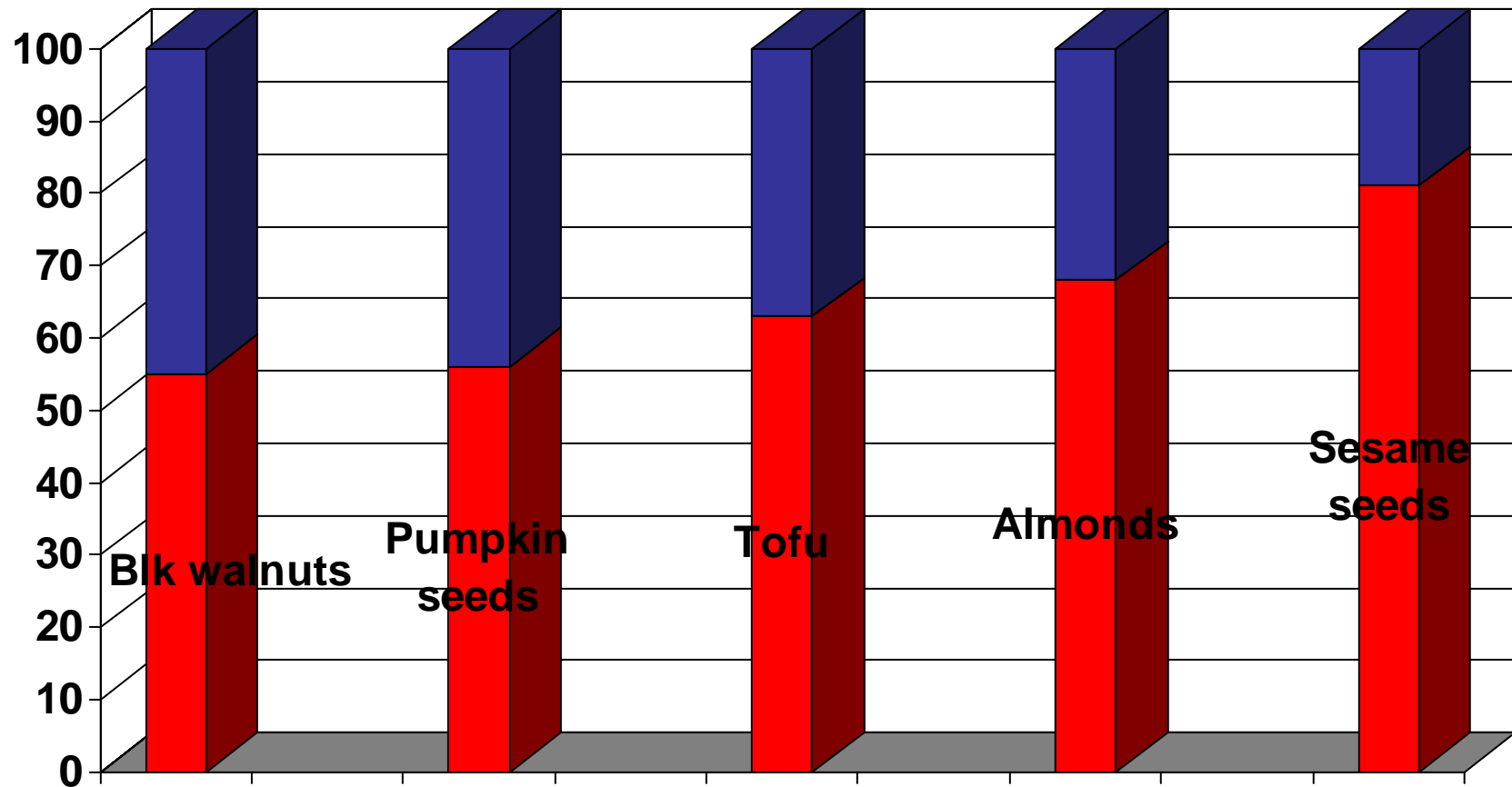
Meat in Diet Blocks Tryptophan flow to Brain

- Foods c large amount of 5 large neutral amino acids will ↓flow of tryptophan to brain³
 - Tyrosine, phenyalanine, leucine, isoleucine, valine
- So if the diet is moderate in tryptophan but high in these 5 aa, one can develop a tryptophan deficiency in frontal lobe of brain & may ↑ risk of depression
- Ratio of tryptophan to the 5 aa is critical yardstick
 - See figure 2 foods high ratio of tryptophan to 5 aa

Ratio of Tryptophan (red) To 5 Amino Acids (blue) (Figure 2)⁴



Ratio of Tryptophan (red) To 5 Amino Acids (blue) (Figure 2)⁴



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Harvard Medical School Study

- Omega 3 fatty acids can be obtained from a plant fat called Linolenic acid
- Individuals with Depression or bipolar disorder may benefit from eating foods high in omega -3 fatty acids ⁴¹
 - Recommendation is 9 g/day

⁴¹ Stoll AL, Severus WE, et al. Omega-3 fatty acids in bipolar disorder: a preliminary double blind, placebo controlled trial. Arch Gen Psychiatry 1999 May;56(5):407 -412

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- Ratios of omega-3 fatty acids to omega-6 fatty acids in the blood can have an impact on depression risk⁷
- May be important of eat foods with higher omega-3:omega-6 fatty acid ratio

7 Adams PB, Lawson S, Et al. Arachidonic to eicosapentaenoic acid ratio in blood correlates positively with clinical symptoms of depression Lipids 1996;31:S-167-176

Plant Foods Containing Omega-3 (Linolenic Acid) Figure 9

Food Item	Amount	Omega-3 (mg)
Flaxseed/Linseed oil	1 Tbs	7520
Walnuts, English (chopped)	¼ cup	2043
Fax seeds, ground	1 Tbs	1470
Canola Oil	1 Tbs	1267
Walnuts, black (chopped)	¼ cup	1031
Wheat germ oil	1 Tbs	938

Plant Foods Containing Omega-3 (Linolenic Acid) Figure 9

Food Item	Amount	Omega-3 (mg)
Soybean oil (Crisco/Wesson)	1 Tbs	927
Green soybeans with salt	1 cup	637
Spinach (canned)	1 cup	353
Sesame seeds	1/4 cup	140
California avocado	1/2 cup	132
Almonds (dry roasted)	1/4 cup	127

Plant Foods Containing Omega-3 (Linolenic Acid) Figure 9

Food Item	Amount	Omega-3 (mg)
Strawberries	1 cup	90
Blueberries	1 cup	80
Safflower oil	1 Tbs	55
Turnips	1 cup	50
Banana (medium)	1 each	39
Sweet potatoes (mashed)	1 cup	36
Apple (medium with peel)	1 each	25

Comparison of Omega-3 & Omega-6 Fatty Acids

Appendix VIII

Food item	Amount	Omega-3:Omega-6	Omega-3	Omega-6
Jack Mackerel	1 cup	8.0	2,639	329
Spinach (canned)	1 cup	5.3	353	66
Flaxseed/ Linseed Oil	1 Tbsp	4.1	7,540	1,822
Canola Oil	1 Tbsp	0.4	1,266	2,776
Walnuts, English	¼ cup	0.2	2,043	9,540
Walnuts, Black	¼ cup	0.1	1,031	10,468

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Folate Acid Deficiency Causes Depression

- A folic acid (or folate) deficiency can be a direct cause of depression ⁵⁶
- More commonly in indiv who consume animal protein than in vegetarians
- RDA for folate is 400 micrograms
 - See figure 11
- Animal protein foods are poor in folate
- Plant based diet⁵⁷ is rich in folate

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- Patients who are depressed due to folate deficiency tend not to improve at all with standard antidepressants
- Treatment is foods high in folate

Sources of Folate Figure 11

Food Item	Amount	Folate (mcg)
Chickpeas	1 cup	1114
Black-eyed Cowpeas	1 cup	1057
Lentils	1 cup	831
Red Kidney Beans	1 cup	725
Okra Pods	1 cup	269
Navy Beans	1 cup	255
Spinach	1 cup	109

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Vitamin B12

- Vital for optimal brain function and avoidance of a depressed mood⁵⁸
- See fig 12
- Recommends fortified plant sources of B12 as the best way to obtain B12

Table 2 Recommended Dietary Allowances (RDA)
for Vitamin B 12 for Children and Adults
Office of Dietary Supplements NIH

Age (Yrs)	Males & Females (ug/day)	Pregnancy (ug/day)	Lactation (ug/day)
1-3	0.9	N/A	N/A
4-8	1.2	N/A	N/A
9-13	1.8	N/A	N/A
14-18	2.4	2.6	2.8
19 and older	2.4	2.6	2.8

Sources of B₁₂ Figure 12

Food Item	Amount	B ₁₂ (mcg)
Dry Cereal (Total)	3 oz	6.00
Steak ¼" lean	3 oz	2.85
Egg Whole	1 large	1.00
Soy Milk (Soy Dream)	8 oz	1.00
Soy Milk (Eden Soy Extra)	8 oz	1.00
Milk Skim	8 oz	0.38
Milk Whole	8 oz	0.36

Sources of B₁₂

Food Item	Amount	B ₁₂ (mcg)
Chicken Breast	1 large	0.32
Egg White	1 large	0.20
Spinach Organic	1 cup	0.02
Soybean Organic	1 cup	0.01
Fruits, Vegetables, Nuts, Grains		0.00