

# Sunflower Seed Butter and Almond Butter as Nutrient-Rich Alternatives to Peanut Butter

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## ABSTRACT

Over 3 million Americans are allergic to peanuts and/or tree nuts. Almond butter is an alternative to peanut butter for those who can tolerate tree nuts. Those allergic to both may be able to consume sunflower seed butter. The USDA Nutrient Data Laboratory is updating the nutrient profile for sunflower seed butter in light of the product's reformulation using mid-oleic seeds and its addition to the School Lunch Program, and a new almond butter profile will update the 1984 data currently in the USDA National Nutrient Database (SR). Retail and/or manufacturer's samples of sunflower seed butter and almond butter were sent to qualified laboratories for analysis of proximate components, minerals, vitamins, fatty acids, amino acids, and phytosterols. Results for the sunflower seed and almond butters were compared to existing nutrient data for peanut butter in SR using Student's *t*-tests (significance at  $p < .05$ ). Sunflower seed butter had significantly more monounsaturated fat, magnesium, phosphorus, zinc, copper, and selenium than either almond or peanut butter. Almond butter had significantly more fiber, calcium, and potassium than sunflower seed or peanut butter. Sunflower seed and almond butter had significantly more iron, manganese, and vitamin E, and less saturated fat than peanut butter. Based on these recent analyses, two tablespoons of almond, sunflower seed, and peanut butters each provide  $\geq 10\%$  DV for protein, magnesium, phosphorus, manganese, and vitamin E. These data provide updated nutrient profiles for almond butter and sunflower seed butter which are especially useful for individuals allergic to peanuts.

## INTRODUCTION

Sunflower seed and almond butters are important as potential alternatives to peanut butter for those sensitive to peanuts.

### Sunflower Seed Butter

- Reformulated using mid-oleic fatty acid sunflower seeds (oil is 65% C18:1) and optimal quantities of sugar, salt, and stabilizer, based on texture, flavor, color, and oil separation (Lima 2005).
- Added to School Lunch Program.

### Almond Butter

- Updated with recent analyses.



## SAMPLING AND ANALYTICAL METHODS

### Almond butter

- Almond Board of California had 8 different retail samples of unsalted almond butter analyzed at a commercial lab and submitted results to NDL for thorough review. Market checks indicate unsalted is more predominant than salted almond butter.

### Sunflower butter

- Samples obtained from manufacturer and local retail outlet; total of 3 composites.
- Food Analysis Laboratory Control Center at Virginia Polytechnic Institute and State University prepared samples according to their standard protocols and shipped composited samples to pre-qualified analytical laboratories along with quality control materials.
- Laboratories conducted analyses of proximate components, sugars, dietary fiber, vitamins, minerals, fatty acids, amino acids, and phytosterols using AOAC or other published methods.

Peanut butter data used for comparison were from previous study; samples obtained from USDA commodity vendors; total of 5 composites.

### Statistical analysis

Used Student's *t*-test to determine significance of differences among nutrient values for almond, sunflower seed and peanut butters.

## RESULTS

### Proximates (Table 1)

- Protein – sunflower seed butter has significantly less ( $p < 0.05$ ) than almond and peanut butters. All three are good sources (FDA 2008), but limited in lysine, methionine, and/or cysteine amino acids.
- Carbohydrate:
  - Total dietary fiber – 2 tbsp almond, sunflower seed, and peanut butter provide 3.3 g, 1.8 g, and 1.8 g, respectively.
  - Total sugars – almond butter did not have any sugar added whereas the other two butters did include nutritive sweetener.
- Total fat – all three nut/seed butters provide about  $\frac{1}{4}$  daily value of total fat per 2 tbsp.

### Fatty Acids (Figure 1)

- Sunflower seed butter has been reformulated using mid-oleic sunflower seeds. Consequently, our results showed sunflower seed butter had significantly more monounsaturated fat (MUFA) than peanut or almond butters ( $p < 0.05$ ).
- Almond and sunflower seed butters had significantly less (about half) saturated fat than peanut butter.

### Minerals and Vitamins (Table 1 and Figure 2)

- Almond butter had significantly more calcium and potassium than sunflower seed or peanut butter ( $p < 0.05$ ).
- Sunflower seed butter had significantly more magnesium, phosphorus, zinc, copper, and selenium than either almond or peanut butter.
- Almond and sunflower seed butter had significantly more iron and manganese than peanut butter.
- Almond butter is an excellent source of magnesium and manganese and good source of calcium, phosphorus, and copper.
- Sunflower seed butter is an excellent source of magnesium, phosphorus, copper, manganese, and selenium and a good source of zinc.
- Sodium – almond butter had no salt added, whereas the other two butters did. Almond and sunflower seed butters are considered low sodium, whereas peanut butter has more than 140 mg/serving so does not qualify for that label claim.
- Almond butter is a good source of riboflavin, sunflower seed butter is a good source of niacin and both are excellent sources of vitamin E.

Table 1. Results per 2 tbsp (32 g) serving of almond, sunflower seed and peanut butters compared to recommended Daily Value (DV)

	Almond Butter		Sunflower Seed Butter		Peanut Butter	
	2 tbsp	%DV	2 tbsp	%DV	2 tbsp	%DV
Energy, kcal	196		197		188	
Protein, g	6.7	13	5.5	11	7.0	14
Total lipid (fat), g	17.8	27	17.7	27	15.9	24
Total carbohydrate, g	6.0	*	7.5	*	7.7	*
Total dietary fiber, g	3.3	13	1.8	7	1.8	7
Total sugars, g	1.4		3.4		2.1	
Calcium, mg	111	11	20	*	17	*
Iron, mg	1.12	6	1.32	7	0.69	14
Magnesium, mg	89	22	100	25	57	14
Phosphorus, mg	163	16	213	21	107	11
Potassium, mg	239	7	184	5	189	5
Sodium, mg	2		106		152	
Zinc, mg	1.05	7	1.56	10	0.85	6
Copper, mg	0.30	15	0.51	25	0.18	9
Manganese, mg	0.68	34	0.66	33	0.44	22
Selenium, $\mu$ g	0.7	*	33.3	48	12.9	18
Thiamin, mg	0.01	*	0.02	*	0.04	*
Riboflavin, mg	0.30	18	0.05	*	NA	
Niacin, mg	1.01	5	2.16	11	4.21	21
Vitamin B <sub>6</sub> , mg	0.10	5	0.18	9	0.18	9
Pantothenic acid, mg	0.03	*	0.37	*	0.33	*
Vitamin E ( $\alpha$ -tocopherol), mg	7.75	39	7.32	37	1.90	10
Total plant sterols, mg	45		67		NA	

\* < 5% DV

Yellow highlights indicate good source (10-19% DV) and green highlights indicate excellent source ( $\geq 20\%$  DV) (FDA 2008)

NA = Not Analyzed

Figure 1. Comparison of fatty acid composition of nut and seed butters

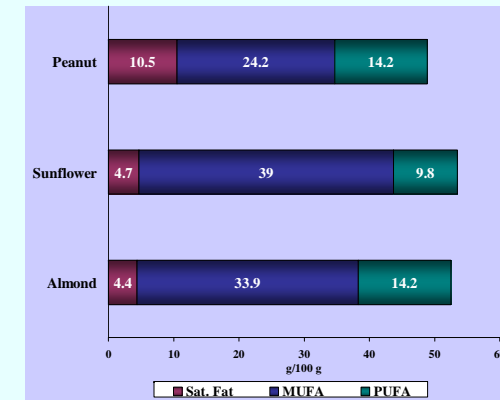
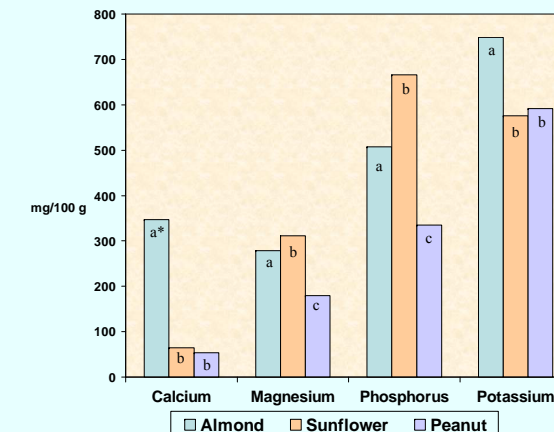


Figure 2. Comparison of select minerals in nut and seed butters



\*For each nutrient, different letters indicate means are significantly different ( $P < 0.05$ ).

## CONCLUSIONS

Most sunflower seed butter on the market, as well as the commodity product used in the School Lunch Program, has been reformulated using mid-oleic sunflower seeds, making it significantly higher in monounsaturated fat (MUFA) than peanut or almond butters.

Compared to peanut butter, almond butter and sunflower seed butter are also good or excellent sources of protein, magnesium, phosphorus, manganese, and vitamin E, yet all three are also high in fat. Sunflower seed butter has the highest amount of many minerals, whereas almond butter is the only good source of fiber and calcium.

With recent Release 23 of the USDA National Nutrient Database for Standard Reference, consumers and health professionals have current nutrient composition of almond butter and sunflower seed butter which is especially useful to those allergic to or counseling clients allergic to peanut butter.

## REFERENCES

- Lima, I.M. and Guraya, H.S. 2005. Optimization analysis of sunflower butter. *J Food Sci.* 70:S365-S370.
- U.S. Food and Drug Administration (FDA). 2008. Guidance for industry: A food labeling guide. Accessed 10/19/2010 at [www.fda.gov](http://www.fda.gov).