

The Nutritional Contributions of Animal Products To The U.S. Diet: The USDA Food Pyramid and Dietary Guidelines

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Abstract

Seems all one ever hears about dietary recommendations is "eat more whole grains, more fruit, more vegetables" and nary a good word about milk, beef, pork, chicken, eggs or the other animal products in the diet. Too many so called nutrition experts put animal products in the "bad food" group based on fat and cholesterol without recognizing the wealth of contributions these products make to a healthy and nutritious diet. There are good reasons why animal products hold important places in the USDA Food Guide Pyramid and in the Dietary Guidelines for Americans, and no matter what the fat/cholesterol-phobic and animal rights activists say, the evidence is clear that the diet is more nutritious, and more enjoyable, with the inclusion of animal products in a balanced diet.

Introduction

In 1908, Ignatovski (Ignatovski 1908) observed that rabbits fed meat, milk and eggs developed arterial lesions similar to atherosclerosis in humans. For the next century the debate has raged over the health risks versus nutritional benefits of animal products in the diet. As the American public has become increasingly aware of the importance of lifestyle factors in health promotion and disease prevention, the deluge of factual and fictional nutritional messages have, for the most part, led to a great deal of confusion and uncertainty as to what constitutes a healthy diet, and whether animal products contribute to nutritional well being or to dietary disaster.

Without question two very important contributors to the nutritional value, and enjoyment, of the American diet are products classified in the meat and dairy groups, both of which hold prominent positions in the U.S. Department of Agriculture Food Guide Pyramid. Unfortunately, today these sources of high quality protein and essential vitamins and minerals don't get the respect they deserve from the "food police",

animal rights activists, the media, or those agencies responsible for promoting a healthy diet. The fact is that animal products have become the target for a wide range of accusations as a contributor to a plethora of chronic diseases, the increased incidence of obesity, and various moral-ethical objections to eating meat products. Between the promotional efforts to get the public to increase consumption of grains, fruits and vegetables, and the admonitions to lower total fat, saturated fat and cholesterol in the diet (Table 1), there is limited appreciation for the substantial nutritional contributions animal products make to a diet which, when considered over the last century, has given the public a longer and healthier life than ever experienced in the history of mankind.

Nutrient Contributions of Animal Products

A common misperception about animal products in the diet is that, due to their fat content, they are major contributors of calories in the diet. As shown in Figure 1, meats and dairy products contribute only a quarter of the total calories in the U.S. diet. In contrast, fats, oils, sugars and sweeteners contribute over a third of all calories and do so with practically no nutritional value (Table 2). The data in Table 2 present the nutritional contributions of the various food groups to the U.S. diet as percentages of total intakes. An inspection of Table 2 will clearly illustrate the multiple contributions animal products make to the U.S. diet and the fact that the nutritional contributions are, in many cases, substantially greater than the caloric contributions. It is well known that dairy products are a major contributor of calcium in the diet; however, dairy products, which provide only 9.3% of the calories, also contribute substantial amounts of high quality protein (19.4%), vitamin A (15.3%), riboflavin (26.1%), vitamin B12 (21.6%), zinc (16.2%) and selenium (11.6%). Foods from the meat group, while providing only 15.2% of calories, contribute protein (42.0%), niacin (33.3%), riboflavin (21.1%), vitamins B6 (34.9%) and B12 (78.0%), zinc (37.6%) and selenium (34.6%) to the nutritional quality of the U.S. diet.

In striking contrast to the multiple nutrient contributions meat and dairy products make to the diet, fats, oils and sweets contribute a large amount of calories with little nutritional benefit. Clearly if one wished to address the national health crisis of obesity, the emphasis needs to be on a reduction in those nutrient-poor sources of excess calories rather than decreases in animal products which serve as nutrient dense

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TABLE 1. Dietary Guidelines for Americans Recommendations: 1980 - 2000

YEAR			
1980/1985	1990	1995	2000
Avoid too much fat, saturated fat, and cholesterol	Choose a diet low in fat, saturated fat, and cholesterol	Choose a diet low in fat, saturated fat, and cholesterol	Choose a diet that is low in saturated fat and cholesterol and moderate in total fat
Eat foods with adequate starch and fiber	Choose a diet with plenty of vegetables, fruits, and grain products	Choose a diet with plenty of grain products, vegetables, fruits	Choose a variety of grains daily, especially whole grains Choose a variety of fruits and vegetables daily

sources of a variety of essential nutrients in addition to high quality protein. This may be especially true in the elderly where decreased caloric needs make nutrient dense foods a critical component of nutritional well-being. A more troubling issue is that reductions in the intake of foods from the meat and dairy groups would significantly impact the current major sources of protein (61.4%), riboflavin (47.2%), vitamin B12 (99.6%), calcium (77%), zinc (53.8%) and selenium (46.2%) in the diet. Clearly the effect of lowering intakes of these nutrients would have negative health effects in the population.

Other Considerations

In our fat- and cholesterol-phobic culture, a majority of consumers consider dietary fat and cholesterol to be major health concerns. The combination of promotion of more grains, fruits and vegetables in the diet along with negative messages regarding fat, saturated fat and cholesterol in the diet have influenced many consumers to reduce, or even severely restrict, animal products in their diets. This could in fact be a

negative factor in the nutritional well being of many consumers in that high quality protein and nutrient density are major contributors to health promotion and disease prevention under a number of circumstances. While numerous examples exist, two very important groups who benefit from the nutrient contributions of animal products are pregnant women and the fetus, and the elderly.

As research expands our understanding of the environmental and life style factors involved in chronic disease risk, it becomes increasingly apparent that there is considerably more to risk reduction than simply eating more fruits and vegetables and less meat, eggs and dairy products. For example, evidence in support of the “fetal origins hypothesis” by Barker and colleagues (Eriksson et al., 2001a; Eriksson et al., 2001b; Godfrey and Barker, 2000; Osmond and Barker, 2000) indicate that low birth weight is associated with a number of chronic diseases later in life. Low intakes of high quality animal products in the diets of pregnant women can have profound effects later in life of the child including increased risks for obesity, diabetes and heart disease. As shown by Godfrey et al. (1996), mothers who had high carbohydrate intakes in early pregnancy had babies with lower placental and birth weights, and low maternal intakes of dairy and meat protein in late pregnancy were also associated with lower placental and birth weights. Can our attempts to lower the risk for chronic diseases in one generation lead to increased risk in the next?

Another consideration often overlooked in discussions of the many contributions of animal products to the diet is the value of high quality protein. A number of recent reports have addressed this issue as related to the elderly and overall health. Castaneda et al. (1995) reported that elderly women on a low-protein diet had significant losses in lean tissue, immune response, and muscle function compared to women with an adequate protein intake. And not only does the amount of protein play an important role, studies show that the source of protein is also important. Pannemans et al. (1998) reported that intake of a high-vegetable-protein diet in elderly women failed to inhibit protein breakdown in the absorptive state as

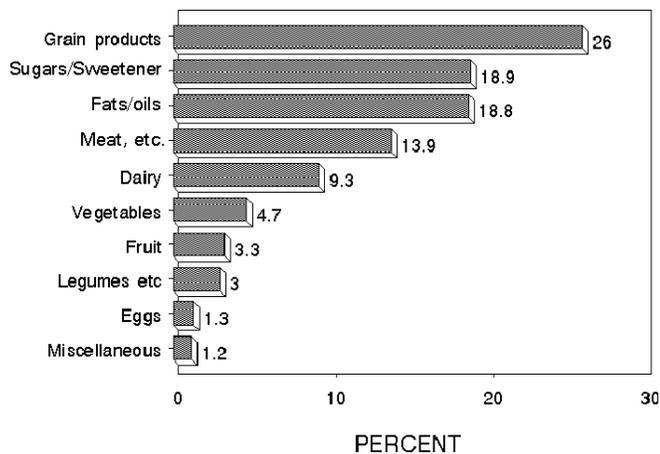


FIGURE 1. Sources of calories (percent) in the U.S. diet. Data from Gerrior and Bente (2001).

TABLE 2. Nutrient Contributions to the American Diet

Nutrient	Grain products	Vegetables	Fruits	Dairy	Meat	Fats, oils & sweets	Legumes, nuts, soy
Energy	26.0	4.7	3.3	9.3	15.2	37.7	3.0
Protein	24.2	5.2	1.3	19.4	42.0	0.1	6.1
Carbohydrate	40.5	8.0	6.0	4.6	0.2	37.6	2.0
Fat	3.0	0.5	0.5	12.6	26.8	51.9	3.7
SFA	2.0	0.2	0.3	24.9	29.4	39.9	2.2
MUFA	1.7	0.1	0.5	8.5	28.8	55.7	3.9
PUFA	5.4	0.9	0.5	2.0	16.2	68.6	5.5
Cholesterol	0	0	0	16.3	78.8	4.9	0
Vit A	8.4	37.9	3.3	15.3	22.8	7.0	0
Vit E	5.2	7.5	3.8	2.8	6.5	68.1	5.5
Vit C	5.2	43.7	42.7	2.5	1.9	0	0
Thiamin	62.2	8.5	3.5	4.7	16.2	0	4.2
Riboflavin	41.9	5.0	2.3	26.1	21.1	0.9	1.5
Niacin	47.5	9.7	2.1	1.2	33.3	0	3.5
Folate	33.3	20.0	10.6	6.2	10.2	0.1	17.4
Vit B6	20.9	20.5	9.7	8.7	34.9	0.2	3.6
Vit B12	0.1	0	0	21.6	78.0	0.2	0
Calcium	5.5	6.4	2.6	72.1	4.9	1.2	4.4
Phosphorous	21.7	7.2	1.9	32.4	27.0	0.5	5.9
Magnesium	26.3	13.5	6.3	15.8	12.6	0.9	12.8
Iron	55.7	9.3	2.4	1.8	16.2	1.0	7.5
Zinc	29.9	6.0	1.2	16.2	37.6	0.5	5.4
Selenium	41.2	2.6	0.5	11.6	34.6	0.9	7.1

Data from Gerritor and Bente (2001).

well as a high-animal-protein diet. The decreased ability of the high-vegetable-protein diet to inhibit protein breakdown resulted in less net protein synthesis in these elderly women. These observations are consistent with the report by Campbell et al. (1999) indicating that consumption of a meat-containing diet contributed to greater gains in fat-free mass and skeletal muscle mass with resistance training in older men as compared to a lactoovovegetarian diet.

These studies represent only a small number of studies that show dietary protein quantity and quality are important considerations in maintaining nutritional well-being and health. From the needs of the growing fetus to the maintenance of lean tissue mass in the elderly, high quality protein sources in the diet are essential for good health over the entire lifespan. This may be especially important in the elderly as they increase their need for high quality protein sources to compensate for a decreased caloric intake in order to maintain lean tissue and muscle mass.

Summary and Conclusions

Animal products in the U.S. diet are not the villainous threat to health and well being portrayed by the “food police” in their sensationalist propaganda. Animal products make important and valuable contributions to both the nutritional and

gastronomical quality of the U.S. diet. And, while we hear a great deal about the needs to lower saturated fat and cholesterol in the diet, we hear little of the 1999 USDA Economic Research Report which stated that “Consumption of dairy products needs to grow by 22 percent and that of meats by 5 percent in order for the average diet to meet Pyramid recommendations” (Young and Kantor, 1999). In contrast, another 1999 USDA report included an article by Bishow et al. (1999) stating, “The development of a wider variety of tasty low-cholesterol and cholesterol-free products may help to persuade a broader range of consumers to make healthy eating a part of their daily routine.” No wonder consumers are confused as to what they should, or should not, be eating.

The affordability and availability of high quality animal products in the diet has made important contributions to the health and longevity of the U.S. public. Today’s extremists attempt to equate eating animal products with social irresponsibility, immorality, and suicidal tendencies, and suggest that the human biological design was never intended to be a meat eater. The combinations of myths, misinformation, half-truths and outright lies have tried to make animal products the scapegoat for modern health problems, forgetting that these are the same animal products which helped correct turn of the century health concerns. The key message is that in a diet of bal-

ance, variety, and moderation, nutrient dense animal products play an established and important role.

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