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NUTRITIONAL ANALYSES: The nutrient values provided for the recipes in this book are estimates only, calculated from the individual ingredients used in each recipe based on the nutritional data found for those ingredients. Optional items are not included. Nutrient content may vary based on methods of preparation, origin, and freshness of ingredients, product brands, and other factors.

For references by chapter, visit plant-poweredprotein.com/references.

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Plant and Animal Protein: Setting the Stage

For plant-based eaters, there are three certainties in life: death, taxes, and the proverbial question “Where do you get your protein?” The obvious answer is “from plants.” Yet this answer might seem bizarre to people who are conditioned to believe that the only “real” sources of protein are meat and other animal products. It’s no mere coincidence that so many consumers hold this belief. Animal-product industries have worked long and hard to give these foods a protein-based health halo. This book is about removing that halo and putting it in its rightful place—on plants. Plants offer people the most healthful, sustainable, and ethical sources of protein. In this book, we guide you through the considerations that brought us to this conclusion. We show you how to achieve optimal intakes of protein at every age and stage of the life cycle and for every level of fitness. We complete the book in the kitchen, with delicious, protein-rich, plant-based recipes to please every palate.

If you had been alive in the early 1900s, your greatest dietary risks would have been malnutrition and foodborne infectious diseases. Malnutrition was due to food shortages or to limited diets centered around starchy staples. Although macronutrients (protein, fat, and carbohydrate) were discovered by the mid-1800s, it was not until the first half of the twentieth century that vitamins and various minerals were identified. The turn of the twentieth century also brought to light the connection between unsanitary food handling and infectious diseases.

In 1906, the book *The Jungle*, by American novelist and journalist Upton Sinclair, inspired a food-safety revolution. This book not only exposed the atrocious living and working conditions of immigrants in the Chicago meatpacking industry but also painted such a disgusting picture of meat production that consumers were driven into action. Sinclair described sausage meat that included rat dung, poisoned bread, and dead rats. He told of workers falling into rendering tanks and being ground up along with animal bits, all of which was packaged and sold as Durham’s Pure Leaf Lard. The public outrage led to the Pure Food and Drug Act and the Meat Inspection Act, both enacted a few months after the book’s release. The improvements in sanitation resulted in an impressive drop in foodborne infectious diseases.

Dietary concerns began to shift from infection control to nutritional adequacy. With the discovery of vitamins, the emerging health challenge became the gradual elimination of deficiency diseases. Families were migrating from farms to cities, and access to safe and nutritious foods was more precarious. From the 1950s to the mid-1970s, international agencies focused on protein malnutrition as a worldwide nutritional problem, particularly in young children. Adding protein-rich animal products to meager diets seemed an obvious solution. Yet with time, it became evident that while some nutritional shortages were due to lack of protein, others were due to limited calories or nutrients, such as zinc, iron, or vitamins.

By the middle of the twentieth century, protein quality gained the attention of nutrition scientists in every corner of the world. The first protein quality assessment tool, called Biological Value, was based on the amino acid needs of weanling rats. Of course, people are not big rats. These rats can double their weight in three weeks, which is not a goal for humans! The fur on rats increases their needs for the sulfur-containing amino acids methionine and cysteine. Animal products contain plenty of these amino acids. Sulfur is part of the aroma of cheese. Rats thrive on cheese and other animal products. Using Biological Value to rate protein quality for humans meant using an inappropriate set of amino acids as the goal. Consequently, the quality of animal protein for people was overestimated, and the suitability of plant protein was underestimated.

This elevated status of animal products led to economic policies that favored meat and milk. In North America this led to subsidies for meat, dairy products, and animal fodder. Educational programs and dietary guidelines communicated the critical importance of these foods. Early food guides had seven or more food groups, with at least four groups emphasizing vegetables, fruits, and grains. But by 1957, the emphasis had shifted. Animal products took up half the page of single-page food guides—and that was the top half. The health halo around animal products was firmly secured.

Optimal nutrition was tied to the presence of animal products in the diet. Messages to “eat more” dominated nutrition-education campaigns. And eat more we did! Deficiency diseases diminished. The interests of animal agriculture became deeply entrenched in the economy. It appeared that nutrition policies were improving people’s health.

Yet the very policies intended to guarantee enough food and prevent nutrient deficiency had introduced serious threats to public health. They came in the form of excesses linked to overweight, obesity, heart disease, cancer, and type 2 diabetes. These conditions are now responsible for approximately 70 percent of deaths worldwide. The health halo around animal products is starting to fade, and global and national dietary guidelines are beginning to shift. Governments are beginning to recognize that legumes, seeds, vegetables, fruits, and whole grains can ensure nutritional adequacy without such health risks.

THE POLITICS OF PROTEIN

Farm Subsidies: Started for the Poor, Now Funneled to the Wealthy

How would the average meat-eater feel about paying 30 dollars a pound for ground beef? Though it might seem like highway robbery, that is what a pound of ground beef would cost in the United States without government subsidies. The meat industry would dwindle without this hefty government support or if consumers had to pay the real costs.

If you were unaware of the extent of government subsidies to animal farmers, this may be a bit of a shock. We could decrease greenhouse gas emissions by shifting subsidies to more sustainable plant foods. This would seem a rather obvious step. Yet when we dive into the facts about subsidies, we discover the power exerted by lobbies from specific groups of farmers.

Around the world, an immense variety of programs subsidize and protect farmers. In the United States, such programs began with the New Deal and the Agricultural Adjustment Act of 1933. In hard times, these set minimum prices, provided compensation for idle land, and paid to destroy livestock if the supply exceeded the demand.

Almost a century later, according to economists, US farm subsidies move taxpayer money to wealthy farm owners and operators. Health experts tell us to avoid certain foods, yet the same foods get massive subsidies. These include corn (for corn syrup and animal fodder), feed grains and soybeans (mostly for animals), various meats, sugar, and high-fat dairy products, such as cheese. A tiny fraction of its roughly 20 billion dollar annual subsidy budget goes to fruits, tree nuts, and vegetables.

Some subsidies are based on production rather than demand. Consequently, mountains of surplus cheese, other dairy products, corn, and livestock raised on subsidized grains are destroyed. Farmers are paid to overproduce.

Meanwhile, health experts advise us to limit or avoid added corn syrup, sugar, and animal products and to eat more plant foods. Heavily subsidized foods are linked with obesity, type 2 diabetes, and cardiovascular disease. More than 50 percent of calories in the US diet come from federally subsidized foods. More of this unhealthy food goes to young and less well-educated people and to school lunch programs.

Massive US subsidies have a devastating effect on international trade. Small farmers in Africa and other countries try to sell their unsubsidized products but can't compete with international prices. As a result, millions of people are left impoverished.

The Agriculture Fairness Alliance in the United States and Nation Rising in Canada are working to reform current subsidy patterns. Canadian subsidies

began at the end of the nineteenth century to keep immigrant farm families on the prairies and growing grain. Now, corporations with millions in annual revenue and effective lobbying tactics replace many small, family-owned farms. The number of Canadian dairy farms has decreased by 91 percent over the last half century. Since 2003, the United States has lost more than half of its licensed dairy operators. Canadian marketing boards for milk, poultry, eggs, and feed grains eliminate competition and raise prices. Farmers who sell outside of the marketing board can face jail time. Pesticides and slaughterhouses are subsidized.

Cow's milk was not consumed by Indigenous people, nor by most Asians and Africans. For about 70 percent of the world's population, milk's lactose sugar is poorly digested and can make people ill. Early North American food guides, with an essential dairy products group, were geared toward European tastes. With time, these guides are becoming more inclusive and health oriented. For years now, North American nondairy milk sales have climbed, while cow's milk consumption has dropped.

Yet milk industry lobbyists exert immense influence over the government. Overproduction has resulted in farmers dumping billions of gallons of milk. Billions of dollars that are funneled toward dairy farmers are based on overproduction, not demand. In 1984, New Zealand repealed agricultural subsidies. These reforms helped farmers become more innovative and productive. Australia, too, has eliminated most farm supports. Shifting subsidies to vegetables and fruits and taxing healthier foods resulted in an improvement of that population's health.

In their document *A multi-billion-dollar opportunity—Repurposing agricultural support to transform food systems*, the Food and Agriculture Organization (FAO) of the United Nations explains how to shift support to sustainable food systems. It states: “Public support mechanisms for agriculture in many cases hinder the transformation toward healthier, more sustainable, equitable, and efficient food systems, thus actively steering us away from meeting the Sustainable Development Goals and targets of the Paris Agreement.”

CHANGING TIMES

We must switch subsidies from poultry, eggs, milk, and meat to vegetables and fruit. With this, we move toward emission targets and limiting climate change.

Are people willing to change their habits? Studies show that concern for animals is less likely to draw some men to a plant-based diet. Men who conform to traditional gender roles and concepts of masculinity eat more beef and chicken, in part because it makes them feel more manly. Health can be a significant motivator for women and for men. A focus on heart health may have appeal.

Plant-based diets can help clear arteries throughout the body. The immediate reward of preventing erectile dysfunction may arouse even more interest!

Environmental reasons may spur even those who believe “real men eat meat” to explore plant alternatives. A focus on being flexitarian and on gradual changes can be helpful.

International meat giants—such as Maple Leaf, Nestlé, Cargill, Smithfield, Perdue, Hormel, and Tyson—see future trends. They are launching veggie burgers and meat alternatives to feed changing appetites. Real men are saying, “Hey, these taste pretty good!” In the lead are Formula One racing champion Lewis Hamilton, NBA star Kyrie Irving, and ultra-endurance athlete Rich Roll.

For more on plant-based athletes, check out chapter 11 and greatveganathletes.com, livekindly.co/vegan-athletes-swear-by-plants, other websites, and documentaries such as *The Game Changers*.