

# Food & Chemical Effects on Acid / Alkaline Body Chemical Balance

Most Alkaline	More Alkaline	Low Alkaline	Lowest Alkaline	Food Category	Lowest Acid	Low Acid	More Acid	Most Acid
Baking Soda	Spices/Cinnamon Valerian Licorice •Black Cohash Agave	•Herbs (most): Arnica, Bergamot, Echinacea Chrysanthemum, Ephedra, Feverfew, Goldenseal, Lemongrass Aloe Vera Nettles Angelica	White Willow Bark Slippery Elm Artemesia Annua	Spice/Herb	Curry	Vanilla Stevia	Nutmeg	Pudding/Jam/Jelly
Sea Salt	•Kambucha	•Green or Mt Tea	Sulfite Ginger Tea	Preservative Beverage	MSSG Kona Coffee	Benzoate Alcohol Black Tea	Aspartame Coffee	Table Salt (NaCl) Beer, Soda Yeast/Hops/Malt
Mineral Water	Molasses Soy Sauce	Rice Syrup Apple Cider Vinegar	•Sucanat •Umehoshi Vinegar •Aigae, Blue Green •Ghee (Clarified Butter)	Sweeter Vinegar	Honey/Maple Syrup Rice Vinegar	Balsamic Vinegar	Saccharin Red Wine Vinegar	Sugar/Cocoa White/Acetic Vinegar
•Umehoshi Plum		•Sake	Human Breast Milk	Therapeutic Processed Dairy	Cream/Butter	Antihistamines Cow Milk	Psychotropics •Casein, Milk Protein, Cottage Cheese	Antibiotics Processed Cheese
		•Quail Egg		Cow/Human Soy	Yogurt	Aged Cheese Soy Cheese Goat Milk	New Cheese Soy Milk	Ice Cream
		•Duck Egg		Goat/Sheep Egg	Goat/Sheep Cheese Chicken Egg	Lamb/Mutton Boar/Elk/Game Meat Shell Fish/Mollusks Goose/Turkey	Pork/Veal Bear Mussel/Squid Chicken	Beef Pheasant
			Oat 'Grain Coffee' •Quinoa Wild Rice Japonica Rice	Meat Game Fish/Shell Fish Fowl	Wild Duck •Triticale Millet Kasha •Amaranth Brown Rice	Buckwheat Wheat •Speltz/Teff/Kamut Farina/Semolina White Rice	Maize Barley Groat Corn Rye Oat Bran	Barley Processed Flour
Pumpkin Seed	Poppy Seed Cashew Chestnut Pepper	Pinrose Oil Sesame Seed Cod Liver Oil Almond	Avocado Oil Seeds (most) Coconut Oil Olive/Macadamia Oil	Nut Seed/Sprout Oil	Pumpkin Seed Oil Grape Seed Oil Sunflower Oil Pine Nut Carrolla Oil	Almond Oil Sesame Oil Safflower Oil Tapioca •Seltan or Tofu	Pistachio Seed Chestnut Oil Lard Peanut Palm Kernel Oil	•Cottonseed Oil/Wheat Hazelnut Walnut Brazil Nut Fried Food
<i>Hydrogenated Oil</i>		•Sprout	Linseed/Fix Oil					
Lentil	Kohlrabi Parsnip/Taro Garlic	Potato/Bell Pepper Mushroom/Fungi	Brussel Sprout Beet Chive/Cilantro Celery/Scallion Okra/Curcumber Turnip Greens Squash Artichoke Lettuce Jicama	Bean Vegetable	Spinach Fava Bean Kidney Bean Black-eyed Pea String/Wax Bean Zucchini Chutney Rhubarb	Split Pea Pinto Bean White Bean Navy/Red Bean Aduki Bean Lima or Mung Bean Chard	Green Pea Peanut Snow Pea	Soybean Carrot
Broccoli	Asparagus Kale/Parley Endive/Arugula	Cabbage Rutabaga •Salsify/Ginseng		Legume Pulse Root			Legumes (other) Carrot Chick Pea/Garbanzo	
•Sea Vegetables (other)	Mustard Greens Jerusalem Artichoke Ginger Root	Eggplant Pumpkin Collard Greens						
•Dandelion Greens								
•Burdock/Lotus Root								
Sweet Potato/Yam	Broccoli							
Lime	Grapefruit Cantaloupe	Lemon Pear	Orange Apricot	Citrus Fruit	Coconut Guava	Plum Prune	Cranberry Pomegranate	
Neckarine	Persimmon Honeydew	Avocado	Banana Blueberry		•Pickled Fruit Dry Fruit	Tomato		
Raspberry	Citrus		Apple Blackberry	Fruit	Fig Persimmon Juice			
Watermelon	•Dewberry Loganberry		Pineapple Juice Raisin, Currant Grape Strawberry		•Cherimoya			
Tangerine								
Pineapple	Mango							

\*Therapeutic, gourmet, or exotic items  
Italicized items are NOT recommended  
Prepared by Dr. Russell Jaffe, Fellow, Health Studies Collegium. Reprints available from ELSA/MCCT Biotechnology, 14 Pidgeon Hill Drive, #300, Sterling, VA 20155. Sources include USDA food data base (Rev 9 & 10), Food & Nutrition Encyclopedia, Nutrition Applied Personally, by M. Watanabe, Acid & Alkaline, by H. Akana, Food growth, transport, storage, processing, preparation, combination, & assimilation influence effect intensity. Thanks to Hank Liers for his original work. (Rev 7/05)

## The Importance of an Alkaline Diet

The internal environment of our bodies is maintained at a pH of just about 7.0. This means our internal environment is alkaline. Maintenance of this state is a dynamic, not static, process mediated moment to moment by numerous reactions that produce acid products. Our internal chemical equilibrium is primarily controlled by our lungs, kidneys, intestines, and skin. For necessary reactions and functions to occur, our body must maintain a proper pH. Adequate alkaline reserves are necessary for optimal pH adjustment. The body needs oxygen, water, and acid-buffering minerals to accomplish the pH buffering, while also briskly eliminating waste products.

When an alkaline environment is maintained in the body, metabolic, enzymatic, immunologic, and repair mechanisms function at their best. The acid-forming metabolites of stress and inflammation and of high fat and high protein foods are adequately and effectively neutralized only when sufficient mineral-buffering reserves are present. Mineral-buffering reserves are the gift that alkaline-forming foods give to our body. A diet that is predominantly alkaline-forming is essential to the maintenance of sustained health.

Most vegetables and fruits contain higher proportions of alkaline-forming elements than other foods. These foods promote a more alkaline environment in the body. For example, commercial corn, barley, soybeans, and legumes are acid forming. This may reflect breeding selection in the last fifty years that favored higher carbohydrate and fat content. Traditional organically or biodynamically grown forms of these grains and grasses may well be much less acid forming. Surprisingly, despite their pronounced acid flavor, citrus fruit and rhubarb form alkaline residues. This is because their distinctive organic acids like citric, succinic, fumaric, and malic (Krebs' DCA or dicarboxylic acid) metabolize to water and alkalizing bicarbonate, while producing energy (ATP) inside the cell.

Body balance, in terms of acid-alkaline state, is a pH of 7.450 for blood in the arteries and 7.350 for blood in the veins. Acid-alkaline equivalence is a pH of 7.000. Thus, a healthy body means a pH that is slightly alkaline. This means there are more buffering mineral receptors for electrons than acid-forming electron donors.

In foods containing large amounts of protein and fat, the acid-forming elements predominate over the alkaline-forming elements. Thus, cow's milk

and related dairy products are acid-forming, although goat and sheep milk/cheeses (with less fat and protein) produce less acid. The one dairy product exception is clarified butter (known as "ghee" in Indian cookery), which has alkalizing short chain fats known as butyrates and caprylates. The butyrates and caprylates present in ghee are also thought to promote healthy bacterial growth in the intestines, promote repair of the intestine wall, and suppress pathogen growth of some yeasts and parasites if they are present.

Whole grains give an acid reaction disproportionate to their protein content due to the extra phosphorus present in the phytates. The phosphate content of commercial grains may be higher than traditional, organic, or biodynamic sources in part because of fertilizer differences and plant strain selection. Although most fruits have an alkaline effect, some such as prunes, plums, and cranberries make a net contribution of acid to the body. Nuts such as coconuts, almonds, and chestnuts are alkaline forming, while others like peanuts (a legume) and walnuts yield net acid. Highly refined and processed foods consisting chiefly of fats, sugars, and simple starches, along with protein-rich foods are metabolically acidifying.

The chart on the back of this page titled, *Food & Chemical Effects on Acid/Alkaline Body Chemical Balance*, presents the message that, in general, fruits, vegetables, lentils, seeds, sprouts, roots, and tubers are healthfully alkalizing, while grains, grasses, fowl, fish, seafood, dairy products, meats, and most beans are acidifying. Here is a way to simplify this and make it memorable. If it comes from under or near the ground, it is likely to be alkalizing. If it comes from on or high above the ground, it is likely to be acid forming.

The specifics of how each food was categorized on this chart are based on a formula wherein protein, fat, carbohydrate, mineral, and other specific factors were taken into account. More specifically, the basic neutral and acidic end-products of protein, fat, and carbohydrate digestion were calculated, and the content of minerals and special factors were also accounted. A computation was used to determine the relative degree of acid- or alkaline-forming effects of the food on body chemistry. Based on this determination, the items were placed in the appropriate acid or alkaline group on the chart.

*Reference:* Jaffe R and Donovan P. *Your Health: A Professional User's Guide*. Sterling, Va. Health Studies Collegium, 1993.