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Sodium in the Diet

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At least 15 or more minerals are found in the body. Sodium is one of the most highly concentrated. About one-third of the body's sodium is found in the skeleton. About one-half the body's sodium is circulating in the blood stream and around the outside of cells. About 10 percent is found inside the cells.

One of the chief functions of sodium is to maintain normal water balance inside and outside the cell. Sodium and chloride are the chief minerals in the fluids circulating outside cells. The minerals inside the cells are mostly potassium and magnesium. Another important function of sodium is to help certain nutrients like glucose pass through the cell wall.

Sodium from food is readily absorbed from the gastro-intestinal tract. Excretion from the kidney is regulated by a complex mechanism involving hormones, enzymes, and products formed by them. Ninety to 95% of the sodium is excreted by this mechanism. Other small amounts are lost through sweat.

Sodium and Sweating

Sodium is lost in sweat. In general, the body adapts itself during sweating so less sodium is lost if sweating is continuous for days. For the healthy individual, a well-balanced diet will provide an adequate sodium intake.

Greater amounts of sodium will be lost when starting to work in a hot climate, or under extremely hot conditions, or through excessive sweating with fever or exercise. Extra table salt can be used for those involved in activities with heavy sweating over several days along with the replacement of fluid during these activities and at meals. It is best to combine fluids and sodium throughout the day and not take individually in concentrated amounts.

Sodium and Weight Loss

Sweating off weight, such as is often done to meet a weight classification in sports, can cause stress to the cardiovascular system and a poor performance record. Severe weight reduction for

children or teenagers can be detrimental during these growing years. Sweating off weight over a period of several hours represents a loss of body water and not a loss of body fat. Drinking water will quickly restore the loss. Instead of losing weight through water and salt restriction, caloric intake should be modified so that 1 or 2 pounds a week are lost until desired weight is reached.

Sodium Restricted Diets

Sodium should not be eliminated from the diet because it is an essential nutrient needed for body functions. Instead sodium intake should be regulated according to the severity of the condition and medications taken. Frequently sodium restricted diets are used to control conditions which cause fluid retention such as in heart or kidney disease. Hypertension (high blood pressure) often is associated with cardiovascular and renal diseases.

The name low-sodium diet is meaningless because many levels of sodium regulation are possible. The level of sodium prescribed will determine food restrictions. The physician should indicate the recommended amount of salt in regard to the patient's medical problem. If the physician does not, individuals involved should ask how restrictive they should be with their diets. Rigid restriction of sodium can be dangerous under certain conditions such as continual vomiting, diarrhea, or problems with kidney regulation and water balance. Recommended intake of sodium may change as the physical condition changes.

Sodium and Pregnancy

At one time doctors greatly restricted the salt intake of pregnant women. This was thought to limit water retention and body swelling. Some pregnant women think they can keep from gaining extra weight by restricting their salt intake. But restricting salt too much can be harmful to the baby and mother. Pregnant women should not restrict salt on their own or because their friends do. The bodies of the mother

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and baby need sodium to function normally. Only under a doctor's orders should salt be restricted.

Sodium and Water Supply

The local health department or heart association can furnish information about the sodium content of local water supplies.

Epidemiologically less atherosclerosis has been found in areas with hard water than in areas with soft water. Currently, scientists are trying to discover relationships between different minerals and heart disease. Specific recommendations cannot be made at this time.

Water softeners work by exchanging sodium for other minerals in the water. The amount of sodium in the soft water will depend on the hardness of local water and the amount of sodium in the softener. Thus a person on a sodium restricted diet of 800 milligrams or less probably should not use softened water.

Sodium in Food

A safe and adequate daily sodium intake is considered to be between 1100 and 3300 milligrams of sodium (3 to 8 grams of table salt). The recommended food pattern for adults from the basic Four Food Guide provides about half a gram (500 milligrams) of sodium if selection does not include foods with added salt.

Sodium is most concentrated in table salt. Table salt or sodium chloride is approximately 40 percent sodium and 60 percent chloride. A salt intake of 10 grams would contain about 4 grams of sodium. The average American uses about 10 to 15 grams of salt (4 to 6 grams of sodium) each day. Salt added at the table, in cooking, or in processed foods will account for most dietary sodium. When salt is not added to food, the day's sodium intake is about 2 to 3 grams.

Most processed foods contain sodium. Label information may list the word *salt*, *sodium chloride*, *MSG* (monosodium glutamate), or *sodium bicarbonate* (baking soda). The word sodium or its chemical symbol *Na* may appear as part of other ingredient names. Baking powder, brines such as used for pickles, sodium benzoate, sodium propionate, and sodium hydroxide are some of these sources. Spiced and/or salted fish or luncheon meat, spiced sauces such as soy sauce or catsup, or foods such as pretzels, potato chips,

crackers, bouillon cubes or granules, and nuts are usually salted.

A concern before the 1970's was the amount of sodium being added to baby food. Because the sodium content of commercial baby food has been reduced, the overzealous parent should not add salt to suit the parent's taste. Too much salt for babies is an extra burden on their bodies and kidneys.

The adult pattern in The Food For Fitness Guide averages less than one gram of sodium. Foods that are most concentrated in sodium are animal foods such as milk, meats, eggs, and certain vegetables such as many dark green leafy ones. Shell fish such as clams, crabs, lobster, oysters, scallops, and shrimp are higher than other fish in sodium content. However, recommended servings of meat, milk, and eggs in daily food patterns should be consumed to provide proper nutrition for the body. When a diet is limited to 2 to 3 grams of sodium or less, daily food intake can easily be selected. Spices and herbs can be used in cooking to offer interesting flavors instead of table salt.

Be sure to read the label of canned, frozen, or dried foods to see if salt has been added. And check the labels on cereals. Puffed rice, puffed wheat, shredded wheat, and cooked cereals are usually low sodium content. Since most quick-cooking cereals have a higher amount of sodium but instant cereals may not, it is important to read the label. Prepared foods are often high in sodium.

Baking powder substitutes use potassium bicarbonate instead of sodium bicarbonate. Since these are fast acting leavening agents, quick breads need to be baked as soon as they are mixed. Yeast breads can be made without adding salt to the recipe. If a diet is greatly restricted in sodium and potassium, baking powder may need to be eliminated. Alternatives for leavening might be yeast or sour dough, or the choice of a recipe that leavens by incorporating air through beating. An example might be recipes with egg whites beaten separately such as pancakes or waffles.

Many toothpastes, laxatives, antacids, and medicines also contain sodium. Check with a physician before using a salt substitute. Some can be harmful depending on health problems.

Sodium in Food

Household Measure

(Figures for sodium are without addition of salt in cooking and without salt added in processed foods such as canned or frozen)

FOOD		Sodium	Food Energy	
		mg.	calories	
	Lite salt	1 level teaspoon	1100	0
	Salt (sodium chloride)	1 level teaspoon	2300	0
	Monosodium glutamate (MSG)	1 level teaspoon	750	0
	Baking soda	1 level teaspoon	1000	0
	Baking powder	1 level teaspoon	370	0
	Soy Sauce	1 level tablespoon	900	0
	MILK			
	buttermilk	1 cup	318	88
	evaporated reconstituted	1 cup	118	137
	nonfat dry solids	1 ounce (4 tbsp.)	149	103
	skim, fluid	1 cup	128	90
	whole	1 cup	122	160
yogurt (from whole milk)	1 cup	115	151	
	CHEESE			
	cottage, creamed	1 oz.	64	30
	cheddar, American	1 oz.	197	112

VEGETABLES**



asparagus	1/2 cup	2	25
beans, green snap or wax	1/2 cup	3	16
bean sprouts	1/2 cup	2	15
beets	1/2 cup	36	27
beet greens, cooked	1/2 cup	130	24
broccoli	2/3 cup (1 large stalk)	10	26
brussel sprouts	6 or 7	10	36
cabbage, shredded	1 cup	20	24
cauliflower	1/2 cup	6	15
carrots	1 large	47	42
celery	1 small inner stalk	25	3
collards, cooked	1/2 cup	43	40
corn	1/2 cup	1	70
cucumbers	1/2 medium	3	8
dandelion greens, cooked	1/2 cup	44	33
eggplant	2 slices	2	25
escarole	7 small leaves	3	4
kale, cooked	3/4 cup	43	39
lettuce	1 oz.	2	5
mushrooms, raw	10 small or 4 large	15	28
mustard greens, cooked	1/2 cup	18	23
okra	8 or 9 pods	2	30
onions	1 tbsp.	1	4
parsnips, cooked	1/2 cup	8	66
peas	2/3 cup	1	71
peppers, green or red	1 shell	13	22
potato	1 - 2 1/4 inch	3	76
pumpkin, canned	1/2 cup	2	38
radishes	5 small	9	9
rutabaga, cooked	1/2 cup	4	35
sauerkraut, drained solids	2/3 cup	747	18
spinach, cooked	1/2 cup	45	21
squash			
summer, cooked	1/2 cup	1	14
winter, cooked	1/2 cup	1	50
sweet potato	1 small	10	114
tomato juice, canned	1/2 cup	200	19
tomatoes	1 small	3	22
turnip greens, cooked	1/2 cup	17	25

FRUIT**



apple	1 - 2" or 1/2 cup juice	2	58
applesauce, unsweetened	1/2 cup	2	41
apricots, fresh	2 - 3 medium	1	51
apricot nectar	2/5 cup	trace	57
banana	1 - 6 inch	1	85
blackberries or blueberries			
or raspberries	5/8 cup	1	58
cantaloupe	1/4 of 5 inch	12	30
cherries, raw or waterpack	1/2 cup	2	50
cranberry sauce	1 rounded tablespoon	1	29
dates	1 medium	trace	27
fig, raw	1 large	1	40
grapefruit	1/2 medium or 1/2 cup juice	1	41
grapes	16 medium	2	50
honeydew melon	1/4 of 5 inch	12	33
lemon or lime	1 medium	2	27
orange	1 - 2 1/2 inch or 1/2 cup juice	1	50
peach	1 medium	1	40
pear	1/2 medium	2	61
pineapple	1 raw slice or 1/3 cup juice	1	44
plums	2 medium	2	66
prunes, dried	2 medium	2	85
rhubarb, cooked, sweetened	3/8 cup	2	141
strawberries	10 large	1	37
tangerine	1 large	2	46
watermelon	1/2 cup	1	26

BREADS AND CEREALS



biscuit***	1 - 2 inch	219	129
bread, white or wheat***	1 slice	117	62
cereal			
farina, grits, cream of wheat,			
oatmeal, rolled wheat*	3/4 cup	1	98
puffed rice or puffed wheat			
or shredded wheat*	2/3 biscuit	1	50
cornbread***	1 - 2 inch square	283	93
cornstarch	1 tablespoon	trace	29
flour	1 tablespoon	trace	29
macaroni, cooked**	1 cup	1	150
muffin***	1 - average	176	118
noodles, cooked**	1 cup	3	200
pancakes***	1 - 4 inch	191	104
popcorn, popped**	1 cup	trace	54
rice, brown or white	3/4 cup cooked	1	100
roll, hamburger	1	152	89
spaghetti, cooked**	1 cup	2	166
tapioca	1 tablespoon	1	36
waffle***	1 - 5 1/2 inch. diam.	356	209

MEAT AND MEAT ALTERNATES**

beans, dried, cooked*	1/2 cup	7	118
beef	3 oz.	40	224
beef tongue	3 oz.	85	176
brains (all kinds) raw	3 oz.	106	106
chicken, turkey (raw)	3 oz.	80	151
duck	3 1/2 oz.	82	326
egg	1 medium	59	78
frankfurter	1 (2 oz.)	542	124
kidney, raw (all kinds)	3 oz.	245	125
lamb, cooked lean	2 oz.	49	110
liver, raw (beef)	3 1/2 oz.	86	136
lentils, dried, cooked*	2/3 cup	7	106
luncheon meat/bologna*	1 oz.	390	75
peanut butter	1 tablespoon	18	86
peanuts, roasted with skin**	1 tablespoon	trace	86
pork			
fresh ham, cooked	2 oz.	37	126
cured	2 oz.	518	123
quail, raw	3 1/2 oz.	40	168
rabbit, raw	3 1/2 oz.	40	159
veal, lean, cooked	2 oz.	30	114

FISH, raw

Abalone	3 1/2 oz.	255	98
Bass, small and largemouth	3 1/2 oz.	68	104
Bonito	3 1/2 oz.	40	168
Buffalo	3 1/2 oz.	52	113
Carp	3 1/2 oz.	50	115
Catfish	3 1/2 oz.	60	103
Caviar, sturgeon	3 1/2 oz.	2200	262
Clams, soft shell	3 1/2 oz.	36	82
Clams, hard shell	3 1/2 oz.	205	80
Cod	3 1/2 oz.	70	78
Crab, steamed	3 1/2 oz.	210	93
Finnan Haddie (smoked haddock)	3 1/2 oz.	6231	103
Flounder	3 1/2 oz.	78	79
Haddock	3 1/2 oz.	61	79
Hake or whiting	3 1/2 oz.	74	74
Halibut, Atlantic or Pacific	3 1/2 oz.	54	100
Herring, Atlantic	3 1/2 oz.	74	176
Herring, Pacific	3 1/2 oz.	74	98
Herring, pickled	3 1/2 oz.	6231	223
Lobster, Northern	3 1/2 oz.	210	91
Mackerel, Atlantic or Pacific	3 1/2 oz.	74	175
Mussels, Atlantic or Pacific	3 1/2 oz.	289	95
Ocean Perch, Atlantic or Pacific	3 1/2 oz.	70	90
Oysters, fresh	3 1/2 oz.	73	66
Oysters, frozen	3 1/2 oz.	380	76
Pike	3 1/2 oz.	51	90
Porgy and Scup	3 1/2 oz.	63	112
Rockfish	3 1/2 oz.	65	100
Salmon, Atlantic	3 1/2 oz.	74	217
Salmon, Atlantic, canned	3 1/2 oz.	74	203
Sardines, Pacific, raw	3 1/2 oz.	74	160
Sardines, Pacific, canned in oil	3 1/2 oz.	823	203
Scallops	3 1/2 oz.	255	81
Shad	3 1/2 oz.	54	170
Shrimp	3 1/2 oz.	140	90
Smelt	3 1/2 oz.	70	98
Snapper, red and gray	3 1/2 oz.	67	93
Sucker, carp	3 1/2 oz.	56	111
Swordfish	3 1/2 oz.	54	118
Trout, brook	3 1/2 oz.	47	101
Trout, Rainbow	3 1/2 oz.	81	195
Tuna	3 1/2 oz.	37	140
Tuna, canned in oil	3 1/2 oz.	800	288
Tuna, canned in water	3 1/2 oz.	41	127

MISCELLANEOUS

bacon, broiled	1 slice	76	48
butter - salted	1 teaspoon	49	36
butter - unsalted	1 teaspoon	trace	36
catsup	1 tablespoon	177	18
cream, coffee	1 tablespoon	6	32
cream, sour	1 tablespoon	12	57
margarine, fortified	1 teaspoon	49	36
mayonnaise	1 tablespoon	84	101
mustard, prepared	1 teaspoon	65	4
olives			
green	2 medium	312	15
ripe	2 large	150	37
pickles, bread and butter	6 medium slices	336	36
pizza, sausage and cheese	1/2 of 14 inch	584	185
sugar	1 tablespoon	1	45
syrup, honey, jelly, jam,			
marmalade	1 tablespoon	0	60
vegetable oil	1 tablespoon	0	126

*Read the label since brands vary on sodium content

**Cooked without salt added

***Prepared with salt and/or baking powder

