

### What foods are high in lysine and low in arginine:

There is a correlation between Lysine and Arginine in Herpes outbreaks.

The general rule is reduce the amount of Arginine in your diet and increase the amount of Lysine. Lysine supplementation is also recommended. See the end of this document for info.

Fish, chicken, beef, lamb, milk, cheese, beans, brewer's yeast, mung bean sprouts and most fruits and vegetables have more lysine than arginine, except for peas. Gelatin, chocolate, carob, coconut, oats, wholewheat and, white flour, peanuts, soybeans, and wheatgerm have more arginine than lysine.

Supplementing your diet with L-Lysine helps to assure that you tilt the scales toward the lysine side, helping to prevent outbreaks. (See Nutrition)

### **Diet and Nutrition**

People with viral diseases can benefit from a diet high in lysine and low in arginine. In the following chart, the foods at the top of the list have higher lysine to arginine ratios.

Diet and vitamin supplements may influence viral replication. A total approach to nutrition should be used. Use this chart as a guide or a reference only, and see what happens. Look at the absolute figures for lysine and arginine content. There is no reason to avoid a food if it has a low lysine/arginine ratio and only a few mg of arginine in it.

### **Ratio of Lysine to Arginine in Certain Foods**, by James M. Scutero

Transcribed and calculated using data from *Agricultural Handbook, 1-23, U.S. Department of Agriculture.*

	Weight (gm)	Lys (mg)	Arg (mg)	Ratio Lys/Arg
<b>Margarine</b>	14.1	9	3	3.000
<b>Plain Yogurt</b>	227	706	237	2.979
<b>Fruit Yogurt, lowfat</b>	227	810	272	2.978
<b>Plain Yogurt, skim</b>	227	1160	391	2.967
<b>Plain Yogurt, lowfat</b>	227	1060	359	2.953
<b>Swiss Cheese</b>	28	733	263	2.787
<b>Gruyere Cheese</b>	28	768	276	2.783
<b>Edam Cheese</b>	28	754	273	2.762
<b>American Cheese Spread</b>	28	427	155	2.755
<b>Gouda Cheese</b>	28	752	273	2.755

<b>Whey, dry, sweet</b>	7.5	77	28	2.750
<b>Blue Cheese</b>	28	526	202	2.604
<b>Provolone Cheese</b>	28	750	290	2.586
<b>Papaya</b>	454	76	30	2.533
<b>Brie Cheese</b>	28	525	208	2.524
<b>Camembert Cheese</b>	28	501	199	2.518
<b>Parmesan Cheese</b>	28	937	373	2.512
<b>Parmesan Cheese, grated</b>	5	192	77	2.494
<b>Gjetost Cheese</b>	28	231	93	2.484
<b>Goat Milk</b>	244	708	291	2.433
<b>Brick Cheese</b>	28	602	248	2.427
<b>Muenster Cheese</b>	28	606	250	2.424
<b>Beets</b>	136	72	30	2.400
<b>Limburger Cheese</b>	28	475	198	2.399
<b>Tilsit Cheese</b>	28	578	241	2.398
<b>Port du salut Cheese</b>	28	563	235	2.396
<b>Processed Swiss Cheese</b>	28	696	293	2.375
<b>Cream Cheese</b>	28	192	81	2.370
<b>Mozzarella Cheese, part s</b>	28	699	295	2.369
<b>Processed American Cheese</b>	28	623	263	2.369
<b>Mozzarella Cheese</b>	28	559	236	2.369
<b>Neufchatel Cheese</b>	28	253	107	2.364
<b>Butter</b>	14.1	9	4	2.250
<b>Colby Cheese</b>	28	561	254	2.209
<b>Monterey Jack Cheese</b>	28	578	262	2.206
<b>Cheshire Cheese</b>	28	551	250	2.204
<b>Cheddar Cheese</b>	28	588	267	2.202
<b>Buttermilk</b>	245	679	309	2.197
<b>Skim Milk</b>	245	663	302	2.195
<b>Half and Half Cream</b>	242	568	259	2.193
<b>Sherbet</b>	193	171	78	2.192
<b>Condensed Milk, sweetened</b>	306	1920	876	2.192
<b>Chocolate Milk</b>	250	629	287	2.192
<b>Nonfat Milk, dry</b>	120	3440	1570	2.191
<b>Lowfat Milk, 2%</b>	244	644	294	2.190

<b>Evaporated Milk</b>	126	681	311	2.190
<b>Ice Cream</b>	133	381	174	2.190
<b>Whole Milk</b>	244	637	291	2.189
<b>Whole Milk, dry</b>	128	2670	1220	2.189
<b>Nonfat Milk, dry, instant</b>	68	1890	864	2.188
<b>Ice Milk</b>	131	409	187	2.187
<b>Whipping Cream, heavy</b>	238	387	177	2.186
<b>Evaporated Milk, skim</b>	128	763	349	2.186
<b>Whipping Cream, light</b>	239	411	188	2.186
<b>Ice Cream, rich</b>	148	327	150	2.180
<b>Mango</b>	300	85	39	2.179
<b>Whipped Cream, pressurize</b>	60	152	70	2.171
<b>Apricot</b>	114	103	48	2.146
<b>Coffee Cream</b>	15	32	15	2.133
<b>Apple</b>	150	17	8	2.125
<b>Ricotta Cheese</b>	246	3290	1550	2.123
<b>Ricotta Cheese, part skim</b>	246	3320	1570	2.115
<b>Pear, dried</b>	175	116	56	2.071
<b>Eggnog</b>	254	758	378	2.005
<b>Applesauce, unsweetened</b>	244	24	12	2.000
<b>Crabapple, slices</b>	110	28	14	2.000
<b>Loquat</b>	16	2	1	2.000
<b>Apple, dried</b>	64	37	19	1.947
<b>Pear</b>	180	23	12	1.917
<b>Apricot, dried</b>	35	89	49	1.816
<b>Cottage Cheese, creamed</b>	210	2120	1190	1.782
<b>Cottage Cheese, Lowfat 2%</b>	226	2510	1410	1.780
<b>Cottage Cheese, dry</b>	145	2020	1140	1.772
<b>Fig, dried</b>	189	228	131	1.740
<b>Fig</b>	65	19	11	1.727
<b>Human Milk</b>	246	168	105	1.600
<b>Avocado</b>	272	189	119	1.588
<b>Salmon</b>	85	1550	1000	1.550
<b>Swordfish</b>	85	1550	1000	1.550
<b>Haddock</b>	85	1480	961	1.540

<b>Smelt</b>	85	1380	897	1.538
<b>Snapper</b>	85	1600	1040	1.538
<b>Pollock</b>	85	1520	989	1.537
<b>Eel</b>	85	1440	938	1.535
<b>Catfish</b>	85	1420	925	1.535
<b>Anchovy, in oit, drained</b>	20	531	346	1.535
<b>Whitefish</b>	85	1490	971	1.535
<b>Tuna, in water</b>	165	4480	2920	1.534
<b>Cod</b>	85	1390	906	1.534
<b>Flat fish, flounder and s</b>	85	1470	959	1.533
<b>Mackerel</b>	85	1450	946	1.533
<b>Shark</b>	85	1640	1070	1.533
<b>Carp</b>	85	1390	907	1.533
<b>Pike</b>	85	1500	979	1.532
<b>Herring</b>	85	1400	914	1.532
<b>Sardines, in oil, drained</b>	24	542	354	1.531
<b>Bass</b>	85	1380	902	1.530
<b>Perch</b>	85	1450	948	1.530
<b>Bluefish</b>	85	1560	1020	1.529
<b>Halibut</b>	85	1620	1060	1.528
<b>Tomato</b>	123	41	27	1.519
<b>Turnips</b>	130	47	31	1.516
<b>Tomato juice</b>	243	54	36	1.500
<b>Soybean sprouts</b>	70	386	266	1.451
<b>Canadian Style Bacon</b>	454	7370	5100	1.445
<b>Wild pheasant</b>	371	7470	5240	1.426
<b>Pork Spareribs</b>	454	4730	3340	1.416
<b>Tomato paste</b>	262	282	200	1.410
<b>Liver cheese</b>	28	334	237	1.409
<b>Chicken, dark meat, w/o s</b>	109	1860	1320	1.409
<b>Chicken, light meat w/o s</b>	88	1730	1230	1.407
<b>Chicken neck</b>	79	298	212	1.406
<b>Summer sausage</b>	23	318	228	1.395
<b>Pineapple</b>	155	39	28	1.393
<b>Pork leg</b>	454	7550	5530	1.365

<b>Pork loin chop</b>	151	1950	1430	1.364
<b>Pork Shoulder</b>	454	7140	5240	1.363
<b>Potato</b>	150	190	140	1.357
<b>Chicken breast</b>	181	2500	1870	1.337
<b>Cream of Mushroom soup</b>	244	127	95	1.337
<b>Turkey noodle soup</b>	244	212	159	1.333
<b>Celery</b>	120	32	24	1.333
<b>Chicken drumstick</b>	110	1160	872	1.330
<b>Potato, baking</b>	202	283	214	1.322
<b>Beef Flank steak</b>	454	7270	5500	1.322
<b>Chicken gumbo</b>	244	161	122	1.320
<b>Chicken noodle soup</b>	241	219	166	1.319
<b>Beef Round steak</b>	454	7320	5550	1.319
<b>Beef noodle soup</b>	244	261	198	1.318
<b>Vegetable w/beef soup</b>	244	344	261	1.318
<b>Cream of Asparagus soup</b>	244	112	85	1.318
<b>Porterhouse steak</b>	454	6560	4980	1.317
<b>Beef T-bone steak</b>	454	6330	4810	1.316
<b>Beef Sirloin steak</b>	454	6880	5230	1.315
<b>Knockwurst</b>	68	634	482	1.315
<b>Beef Rib roast</b>	454	6050	4600	1.315
<b>Beef Short ribs</b>	454	5430	4130	1.315
<b>Beef Chuck roast</b>	454	6900	5250	1.314
<b>Beef Tenderloin</b>	454	6990	5320	1.314
<b>Persimmon</b>	200	55	42	1.310
<b>Squash, summer</b>	130	85	65	1.308
<b>Chicken leg</b>	231	2470	1890	1.307
<b>Chicken, light meat</b>	116	1920	1470	1.306
<b>Ham, boneless</b>	454	6750	5170	1.306
<b>Chicken canned, boned</b>	142	2500	1920	1.302
<b>Turkey, dark meat</b>	152	2620	2020	1.297
<b>Cream of chicken soup</b>	244	215	166	1.295
<b>Chicken heart</b>	6.1	79	61	1.295
<b>Turkey, light meat</b>	180	3540	2740	1.292
<b>Bratwurst, ckd</b>	85	910	706	1.289

<b>Turkey, canned boned</b>	142	3040	2360	1.288
<b>Italian sausage, ckd</b>	67	1020	792	1.288
<b>Pork sausage</b>	28	252	196	1.286
<b>Wild quail</b>	405	6660	5180	1.286
<b>Chicken thigh</b>	120	1310	1020	1.284
<b>Chicken, dark meat</b>	160	2150	1680	1.280
<b>Goose, domesticated</b>	320	4010	3150	1.273
<b>Pork and beef sausage</b>	13	141	111	1.270
<b>Bologna, beef and pork</b>	28	250	198	1.263
<b>Peach, dried</b>	130	151	120	1.258
<b>Black bean soup</b>	247	415	331	1.254
<b>Bean w/ frankfurters soup</b>	250	415	331	1.254
<b>Peach</b>	115	20	16	1.250
<b>Corned Beef, brisket</b>	454	5100	4100	1.244
<b>Pastrami</b>	28	375	302	1.242
<b>Bologna, beef</b>	28	254	205	1.239
<b>Frankfurter, beef</b>	45	389	314	1.239
<b>Ground beef, regular</b>	113	1560	1260	1.238
<b>Cream of celery soup</b>	244	73	59	1.237
<b>Ground beef, lean</b>	113	1670	1350	1.237
<b>Chicken liver</b>	32	35	352	1.236
<b>Duck liver</b>	44	624	505	1.236
<b>Turkey liver</b>	102	1540	1250	1.232
<b>Mortadella</b>	28	358	291	1.230
<b>Goose liver</b>	94	1160	943	1.230
<b>Plum</b>	5.5	90	74	1.216
<b>Green beans</b>	110	97	80	1.213
<b>Chicken back</b>	177	1090	900	1.211
<b>Beef smoked, chopped</b>	28	467	386	1.210
<b>Pork Bacon</b>	454	2900	2400	1.208
<b>Beef, dried</b>	28	673	557	1.208
<b>Brotwurst</b>	28	323	268	1.205
<b>Polish sausage</b>	28	315	262	1.202
<b>Salami, hard</b>	10	182	152	1.197
<b>Bologna, pork</b>	28	341	285	1.196

<b>Chicken wing</b>	90	698	585	1.193
<b>Braunschweiger</b>	28	258	217	1.189
<b>Duck, domesticated</b>	287	2610	2210	1.181
<b>Lentil sprouts</b>	77	548	470	1.166
<b>Lettuce, romaine</b>	56	58	50	1.160
<b>Lettuce, iceberg</b>	75	60	52	1.154
<b>Caviar, black and red</b>	16	293	254	1.154
<b>Cauliflower</b>	100	108	96	1.125
<b>Vienna sausage</b>	16	127	113	1.124
<b>Liver</b>	113	1570	1420	1.106
<b>Guava</b>	112	21	19	1.105
<b>New England Clam Chowder</b>	244	251	229	1.096
<b>Cream of potato soup</b>	244	83	76	1.092
<b>Spinach</b>	55	98	90	1.089
<b>Kale</b>	67	132	123	1.073
<b>Chicken rice soup</b>	241	251	234	1.073
<b>Kielbasa</b>	28	286	267	1.071
<b>Frankfurter, beef and por</b>	45	407	382	1.065
<b>Whole Egg</b>	50	410	388	1.057
<b>Egg White</b>	33	206	195	1.056
<b>Whole Egg, dried</b>	5	155	147	1.054
<b>Watermelon</b>	160	99	94	1.053
<b>Cabbage, chinese</b>	70	62	59	1.051
<b>Corn</b>	154	210	200	1.050
<b>Sweet potato</b>	130	105	100	1.050
<b>Turnip greens</b>	55	54	52	1.038
<b>Abalone</b>	85	1090	1060	1.028
<b>Oysters</b>	84	444	433	1.025
<b>Clams</b>	180	1720	1680	1.024
<b>Scallops</b>	85	1060	1040	1.019
<b>Banana</b>	175	55	54	1.019
<b>Asparagus</b>	134	194	192	1.010
<b>Oat flakes</b>	48	583	579	1.007
<b>Mayonnaise</b>	185	1400	1400	1.000
<b>Vegetarian vegetable soup</b>	241	99	99	1.000

<b>Beet greens</b>	38	20	20	1.000
<b>Endive</b>	50	32	32	1.000
<b>Leeks</b>	124	97	97	1.000
<b>Pumpkin</b>	245	96	96	1.000
<b>Shrimp</b>	85	1500	1510	0.993
<b>Crab</b>	85	1350	1360	0.993
<b>pea soup w/ham</b>	253	696	703	0.990
<b>Lima beans, cooked</b>	170	765	775	0.987
<b>Egg Yolk</b>	17	189	193	0.979
<b>Okra</b>	100	82	84	0.976
<b>Broccoli</b>	88	124	128	0.969
<b>Chicken gizzard</b>	37	465	484	0.961
<b>Strawberries</b>	149	37	39	0.949
<b>Collards</b>	186	140	72	0.931
<b>Minestrone soup</b>	241	183	198	0.924
<b>Carrots</b>	110	44	48	0.917
<b>Dates</b>	83	50	55	0.909
<b>Peppers, sweet</b>	100	38	42	0.905
<b>Radish</b>	45	16	18	0.889
<b>Watercress</b>	104	172	200	0.860
<b>Swiss chard</b>	36	36	42	0.857
<b>Eggplant</b>	82	42	50	0.840
<b>Tomato soup</b>	244	51	61	0.836
<b>Cabbage, common</b>	70	40	48	0.833
<b>Wheat germ</b>	180	1330	1790	0.743
<b>Peas, green</b>	146	463	625	0.741
<b>Brussels sprouts</b>	88	130	178	0.730
<b>Tangerine</b>	116	27	37	0.730
<b>Orange</b>	180	62	85	0.729
<b>Onions, green</b>	100	4	6	0.667
<b>Mushrooms</b>	70	48	72	0.667
<b>Cucumber</b>	104	22	36	0.611
<b>Wheat granules</b>	28.4	101	169	0.598
<b>Corn grits</b>	242	68	114	0.596
<b>Snails</b>	85	1250	2100	0.595

<b>Wheat, shredded</b>	23.6	79	133	0.594
<b>Wheat flakes</b>	33	101	171	0.591
<b>Cream of wheat</b>	251	98	166	0.590
<b>Pistachios, shelled</b>	128	1640	2790	0.588
<b>Corn, puffed</b>	28.4	65	112	0.580
<b>Wheat, puffed</b>	12	49	85	0.576
<b>Squash, winter</b>	205	902	1590	0.567
<b>Bran flakes</b>	47	177	314	0.564
<b>Elderberries</b>	145	38	68	0.559
<b>Plantain</b>	148	89	160	0.556
<b>Oats, puffed</b>	28.4	175	320	0.547
<b>Oatmeal</b>	234	78	147	0.531
<b>Cashews</b>	160	246	470	0.523
<b>Chestnuts, fresh</b>	160	246	470	0.523
<b>Rice, puffed</b>	14	38	73	0.521
<b>Yams</b>	200	89	191	0.466
<b>Pumpkin seeds &amp; squash</b>	140	2530	5570	0.454
<b>Garlic</b>	3	8	19	0.421
<b>Macadamia nuts</b>	134	434	1200	0.362
<b>Blackberries</b>	145	17	49	0.347
<b>Blueberries</b>	145	17	49	0.347
<b>Onions, mature</b>	160	90	262	0.344
<b>Grapes, slip skin</b>	153	13	42	0.310
<b>Grapes, adherent skin</b>	160	24	78	0.308
<b>Peanuts</b>	144	1450	5050	0.287
<b>Peanut butter</b>	15	176	613	0.287
<b>Coconut, shredded</b>	80	118	437	0.270
<b>Almonds</b>	142	946	3540	0.267
<b>Rutabaga</b>	140	55	207	0.266
<b>Pecans</b>	108	315	1190	0.265
<b>Sesame seeds</b>	150	1240	4990	0.248
<b>Hickory nuts</b>	15	70	298	0.235
<b>Brazil nuts</b>	140	757	3350	0.226
<b>Tahini</b>	15	82	378	0.217
<b>Grape juice</b>	253	25	119	0.210

<b>Tangerine juice</b>	247	17	84	0.202
<b>Pine nuts</b>	28	256	1330	0.192
<b>Orange juice</b>	248	22	117	0.188
<b>Hazelnuts</b>	135	459	2480	0.185
<b>Walnuts</b>	100	466	2520	0.185

To avoid herpes attacks, balance out the high-arginine foods with high-lysine foods. A classic combination is eating brown rice with cooked dried beans. While brown rice is high in arginine (190 mg), the dried beans have an excess of 270 mg. of lysine, which more than compensates for the lack of lysine in the brown rice. Another approach is to eat very small portions when eating high-arginine foods like hazel nuts and peanuts. Eating certain foods and avoiding others can reduce the pain and prevent recurrences of herpes attacks.

Popcorn has a high arginine to lysine ratio, but those prone to herpes can still enjoy it. After popping, sprinkle with Nutritional Yeast (from the health store). This adds a cheesy flavor to the popcorn. The arginine is neutralized because one tablespoon of nutritional yeast contains 190 mg. more lysine than arginine.

Fish, meats and dairy products are high in lysine. However, eating too much of these high protein foods can make the body too acidic, which can also cause a herpes outbreak. Moderation is the key. Good sources of lysine are also found in wheat germ, legumes and in many fruits and vegetables.

		<b>High-Lysine Foods Foods to Eat</b>		<b>High-Arginine Foods Foods to Avoid</b>			
<b>mg. excess lysine</b>		<b>food</b>	<b>portion</b>	<b>portion</b>	<b>food</b>	<b>mg. lysine deficiency</b>	
930		fresh fish	4 oz	1/2 cup	hazel nuts	-2250	
880		shark	4 oz	1/2 cup	brazil nuts	-2110	
810		canned fish	4 oz	1/2 cup	peanuts	-2060	
740		chicken	4 oz	1/2 cup	walnuts	-810	
720		beef	4 oz	1/2 cup	almonds	-710	
520		goat's milk	1 cup	1/2 cup	cocoa powder	-650	
420		cow's milk	1 cup	2 Tblsps	peanut butter	-510	
420		lamb	4 oz	1/2 cup	sesame seeds	-450	
410		mung beans,	1/2 cup	1/2 cup	cashews	-420	

	cooked					
380	pork	4 oz		1/2 cup	carob powder	-310
280	cheese, all types	1 oz		1/2 cup	coconut	-290
270	dried beans, cooked	1/2 cup		1/2 cup	pistachio nuts	-240
240	lima beans	1/2 cup		1/2 cup	buckwheat flour	-230
220	cottage cheese, dry	1/2 cup		1/2 cup	chickpeas (garbanzos)	-210
210	mung bean sprouts	1/2 cup		1/2 cup	brown rice, cooked	-190
190	nutritional yeast	1 Tblsp		1/2 cup	pecans	-180
130	soybeans, cooked	1/2 cup		1/2 cup	oatmeal, cooked	-130
120	egg	1		1/2 cup	raisins	-130
100	human milk	1 cup		1/2 cup	sunflower seeds	-120

Chart is from *The Saturday Evening Post Family Cookbook*.

#### Lysine to treat Herpes

1000 mg – Lysine three times per day with meals during flare-ups. If you suffer from recurrent or frequent herpes outbreaks, continue with a maintenance dose of 1000 mg of lysine per day.

#### General Interactions with Lysine

It is not recommended that you take lysine with milk or dairy products.

Very large doses of lysine can increase the toxicity of aminoglycoside antibiotics (i.e. gentamicin, neomycin and streptomycin).

#### **Side Affects**

Most common side affects of Lysine have been abdominal cramps and diarrhea. These have been reported by those taking extremely high doses of lysine (more than 10 g per day).

**The following remedies have been found effective in treating herpes infections:**

- Lysine (an essential amino acid)
- Aloe Vera
- Lemon Balm (*Melissa officinalis*)
- Resveratrol (a very potent antioxidant from grape seed)
- Garlic
- Lactoferrin (a potent antimicrobial protein found in colostrum)