

# The PRAL Table

a clinical guide for assessing dietary acid levels

**All foods have an acidic or alkalisng effect in the body, but it is crucial to know whether the diet is more acidic or alkaline so that a daily balance is maintained, as latent acidosis is linked to chronic disease and ill health.**

To understand the acid/alkaline nature of foods, the USDA (United States Department of Agriculture) developed a formula that calculates the acidifying effects of food when eaten, according to their levels of alkalisng minerals and acidic producing proteins.

Based on this formula, an easy reference table was produced that provides the potential renal acid load (PRAL) of many foods—the PRAL Table. By using the PRAL Table, it is possible to estimate whether the diet is overly acidic or more alkaline in nature, or in balance.

Many scientific studies have validated the accuracy and usefulness of the PRAL Table in estimating the acidic load of any given diet.

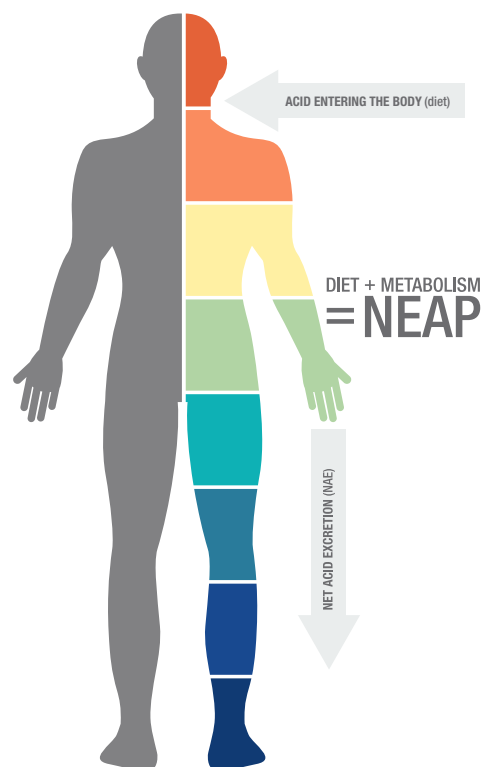
**The PRAL provides a unique tool for practitioners and patients to analyse potential dietary acid loads and take the appropriate steps to include more alkalisng foods and supplements, if necessary. It is not a diet but a guide to the potential acid/alkaline balance of the diet.**

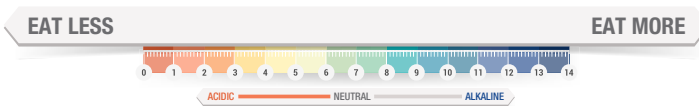
## The effects of an acidic diet

The Standard Australian Diet (SAD) produces an average of more than 100 mEq/day of acid but our bodies can only excrete approx. 40-60mEq/per day of acid. The kidneys process the majority of this acid load, which is why we refer to foods as having a potential renal acid load (PRAL).

Our net endogenous acid production, or NEAP, is made up of the foods we eat plus our metabolism. If we are eating a highly acidic diet, it will increase the NEAP and put an extra load on our acid buffering systems and the ability of our kidneys to excrete the acid.

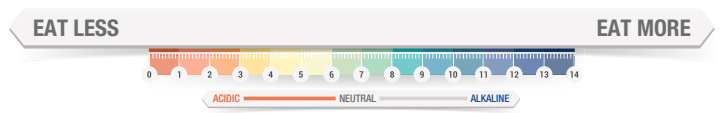
The potential effect of a long-term imbalance (acid in vs acid out) is a state of latent acidosis or chronic mild metabolic acidosis, which, as stated earlier, has been linked to poor health and chronic disease.





## ACID-FORMING FOODS (+ PRAL values per 100g)

Animal Protein						HIGH	MEDIUM	LOW
Clams	+ 12.55	Lobster/crayfish	+ 10.35	Rabbit	+ 19	Scallops		+ 13.3
Corned beef	+ 13.2	Luncheon meats (average)	+ 10.5	Salami	+ 11.6	Trout		+ 10.8
Egg yolk (chicken)	+ 23.4	Mussels	+ 15.3	Salmon	+ 13.5	Tuna		+ 14.9
Goose	+ 13	Organ meats (average)	+ 15	Sardines	+ 13.3	Venison		+ 15.4
Liver (beef)	+ 15	Prawns	+ 17.5					
Beef	+ 7.8	Duck	+ 8.4	Lamb	+ 7.6	Shrimp		+ 7.6
Carp	+ 8.0	Eggs whole (chicken)	+ 8.2	Pork	+ 7.6	Turkey		+ 9.9
Chicken	+ 8.7	Fish (average)	+ 8.0	Sausages (average)	+ 8.5	Veal		+ 9.0
Cod	+ 7.1	Frankfurts	+ 6.8					
Egg white (chicken)	+ 1.1	Oysters (raw)	+ 1.9					
Grains, Breads & Pasta								
Oats (rolled)	+ 12.5	Rice (brown)	+ 12.5					
Amaranth	+ 7.5	Flour (average)	+ 7.5	Rice cakes	+ 7.7	Spaghetti, wholemeal		+ 7.3
Bread sourdough	+ 6	Macaroni	+ 6.1	Rusk	+ 5.9	Spelt		+ 8.8
Bread Pita wholewheat	+ 5.9	Millet	+ 8.6	Spaghetti	+ 6.5	Wheat		+ 8.2
Cornflakes	+ 6	Pasta	+ 6.5					
Barley	+ 5	Corn cob cooked	+ 0.3	Pumpnickel	+ 4.2	Rice, white		+ 1.7
Bread (average)	+ 3.8	Corn/cornstarch	+ 3.8	Quinoa	+ 2.4	Rye		+ 4.4
Buckwheat	+ 3.7	Pasta, gluten free rice base	+ 4.41	Rice, wild cooked	+ 2.0			
Beans & Legumes								
Lima beans	+ 6.16	White beans	+ 5.64					
Chick peas	+ 2.5	Kidney beans	+ 0.7	Lentils	+ 3.5	Pinto Beans		+ 1.25
Green peas	+ 1.2							
Nuts & Butters								
Tahini	+ 18.7							
Brazil nuts	+ 8.1	Peanut butter (processed)	+ 7.35	Peanuts	+ 8.3	Walnuts		+ 6.8
Cashews	+ 8.9							
Pecans	+ 2.1	Pistachios	+ 2.0	Almonds, raw	+ 3.1			
Dairy								
Cheese Blue vein	+ 12.0	Cheese Feta	+ 11.2	Cheese hard (average)	+ 18.6	Cheese, low fat cheddar		+ 26.4
Cheese Brie	+ 11.2	Cheese Quark	+ 11.1	Cheese, high protein (average)	+ 23.6	Cheese, Parmesan		+ 34.2
Cheese, Cottage	+ 8.7	Cheese low protein (average)	+ 8	Cheese ricotta	+ 6.2			
Butter	+ 0.6	Cream	+ 1.2	Milk, cows	+ 1.1	Yoghurt, cows		+ 1.5
Buttermilk	+ 0.5	Ice cream	+ 0.6	Sour cream	+ 1.2			
Vegetables								
Alfalfa sprout	+ 1.7	Peas, frozen (cooked)	+ 2.2					
Alcohol								
Distilled spirits	+ 0.11	Wine	+ 0.03					
Drinks								
Carbonated drinks	+ 0.05	Coca cola	+ 0.4	Soy milk	+ 1.3			
Vegetarian Protein								
Chia	+ 14.4	Sunflower Seeds dried	+ 11.6					
Tempeh	+ 6.6							
Tofu	+ 1.5							
Sweets & Sugars								
Crackers, wheat low fat	+ 5.84							
Crackers, arrowroot	+ 4.47	Cake (average)	+ 3.70	Cookies, choc chip low fat	+ 2.39	Milk chocolate		+ 2.40
Other								
Gelatin	+ 41.76							
Vinegars - av	+ 2.0							



## ALKALINE FOODS (- PRAL values per 100g)

Vegetables				LOW	MEDIUM	HIGH	
Artichokes	- 3.2	Cauliflower	- 4.0	Gherkin, pickled	- 1.6	Potato	- 4.0
Asparagus	- 0.4	Chicory	- 2.0	Green beans	- 3.1	Pumpkin	- 3.8
Beets	- 4.9	Cucumber	- 0.8	Leeks	- 1.8	Radish, red	- 4.4
Broccoli	- 4.0	Edamame	- 0.5	Lettuce, average	- 2.0	Sauerkraut	- 3.0
Cabbage	- 2.8	Eggplant	- 3.4	Mushrooms	- 1.4	Tomato	- 3.1
Capsicum, green	- 1.4	Frozen mixed vegetable	- 2.8	Onions	- 1.5	Zucchini	- 4.6
Carrot	- 5.7	Garlic	- 1.7				
Artichokes, Jerusalem	- 5.7	Chives	- 5.3	Ginger, fresh	- 7.9	Rocket (Arugula)	- 7.8
Avocado	- 8.2	Collards	- 5.7	Kale	- 7.8	Rutabaga	- 5.0
Beetroot	- 5.8	Dandelion greens	- 7.9	Kohlrabi	- 5.5	Sweet Potato	- 6.5
Brussel sprouts	- 5.5	Endive	- 6.0	Mustard Greens	- 6.8	Watercress	- 5.7
Celery	- 5.2	Fennel	- 7.9	Parsnips	- 5.8		
Chard	- 12.2	Spinach	- 14.0				
Oriental Vegetables							
Maitake	- 0.8	Shitake	- 1.7	Spirulina	- 2.7	Wakame	- 1.3
Nori	- 3.4						
Bamboo shoots	- 7.9	Pak choy	- 5.1				
Fruits							
Apple (average)	- 2.2	Honeydew melon	- 4.4	Orange	- 2.8	Plums	- 2.6
Apricot	- 4.3	Lemon	- 2.6	Papaya	- 4.0	Pomegranate	- 3.2
Blackberries	- 2.8	Lime	- 1.7	Peach	- 3.1	Raspberries	- 2.4
Blueberry, fresh	- 1.2	Mango	- 3.0	Pear	- 2.1	Strawberries	- 2.5
Grapes	- 3.9	Mulberries	- 2.9	Pineapple	- 2.2	Tomato	- 3.1
Grapefruit	- 3.5	Nectarine	- 3.1				
Avocado	- 8.2	Currants	- 6.5	Fruit straps	- 5.9	Kiwi fruit	- 5.6
Banana	- 5.5						
Banana chips, dehydrated	- 10.2	Dates - medjool	- 13.6	Raisins	- 14.4		
Vegetarian Protein							
Chestnuts, water -tinned	- 1.5	Hazelnuts	- 3.1	Soy beans, green, raw	- 3.7		
Chestnuts, European raw	- 8.9						
Pumpkin seeds	- 14.3						
Spices & Seasonings							
Garlic, fresh	- 2.6	Salt	- 0.5				
Basil, fresh	- 6.5	Cocoa powder	- 9.8	Coriander, fresh	- 9.5	Ginger, fresh	- 7.9
Chilli, fresh	- 5.3						
Cumin seeds, dried	- 32	Dill, fresh	- 16	Parsley, fresh	- 11	Rosemary, fresh	- 16.4
Chilli powder	- 31.4	Ginger, dried powder	- 24.5	Parsley, dried	- 52		
Alcohol							
Beer	- 0.2						
Drinks							
Apple juice	- 2.2	Coffee, black	- 1.4	Lemon juice	- 1.9	Pineapple juice	- 2.7
Apricot nectar	- 2.1	Grapefruit juice, pink	- 3.0	Orange juice	- 3.6	Vegetable juice (average)	- 3.8
Coconut milk, canned	- 1.6	Herbal tea (average)	- 0.2	Tomato juice	- 3.4	Water	0
Coconut water	- 5.12						
Fats & Oil							
Coconut oil	0	Fish oil	0	Flaxseed oil	- 0.08		
Other							
Mustard	- 1.14	Tomato Sauce	- 2.08	Goats milk	- 0.54		
Chocolate dark 70-80%	- 6.68						



## Guidelines to using the PRAL Table

- The PRAL Table is a guide to assess the general acidity/alkaline nature of someone's diet; it is not a dietary plan.
- Values listed on the PRAL Table are based on 100g of the food.
- Values can vary due to cooking methods, food variety, growing conditions, season.

### Analysing a single meal

1. Calculate the total grams of each food.
2. Compare to the PRAL Table, which is based on 100 grams, to find an approximate PRAL value for each food.
3. To get the total PRAL value of the meal, add up all the acidic values, and then minus all of the alkaline values, marked with a minus (-).
4. The final is the approximate PRAL value of the meal. Please see the example below, which shows that overall this meal is acidic (having an overall positive PRAL value) and could benefit from adding more alkalising foods, like fresh greens.

Food - Breakfast	PRAL value per 100g	Calculated PRAL value per serve
2 (50g) eggs	+ 8.2	+ 8.2
2 slices wholemeal toast 100g	+ 3.8	+ 3.8
Tomato 50g	- 3.1	- 1.55
Butter 10g	+ 0.06	+ 0.06
		<b>+10.51 TOTAL</b>

The Standard Australian Diet (SAD) produces an average of more than 100 mEq/day of acid but our bodies can only excrete approx. 40-60mEq/per day of acid.

### Analysing the diet from multiple meals

1. Gather a food diary over a set period of time.
2. Note down which column each acid food falls under on the PRAL Table (very high acid to low acid alkaline).
3. Then note down which column each alkalising food falls under on the PRAL table. (low alkaline to very high alkaline).
4. Generally, analyse the acidic food amounts against the PRAL Table, which is based on 100 grams, to find an approximate PRAL value. Add up your estimated PRAL total for the acidic foods.
5. Generally, analyse the alkaline food amounts against the PRAL Table, which is based on 100 grams, to find an approximate PRAL value. Add up your estimated PRAL total for the alkaline foods (ignore the minus at this stage).
6. Now minus the alkaline foods PRAL value total from the acidic foods PRAL value total to get the overall general acid or alkaline levels of the diet. This is the approximate PRAL level of the diet, over the set time period.

**You can also use the PRAL Table as a general guide, without calculating the PRAL value. By using the coloured areas as a guide you can choose a balanced diet aiming for 1/3 of acid and 2/3 alkaline forming foods and drinks.**

Remember an acid food is not a bad choice. Choose an acid food as your main protein source, then balance it out with a greater selection of alkaline foods.

