

*Hyperacidity
and the body*

A GUIDE FOR PATIENTS





Hyperacidity and the body

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Introduction

People in the developed nations have an enormous choice of different foods. We are able to obtain virtually any foodstuff we want at any time independent of the season. Fruit, vegetables, meat, fish and cereal products are offered in a large variety of choices in the supermarkets. Nevertheless, the subject of diet has never been more important than at present.

- **How do we best nourish ourselves in a healthy way?**
- **How do we cover our nutritional requirements without overeating?**
- **What is a balanced diet?**

Many questions to which there are different answers. This patient guide is intended to provide a closer look at the aspect of nutrition-related hyperacidity.



*Just imagine,
what acid would do here*



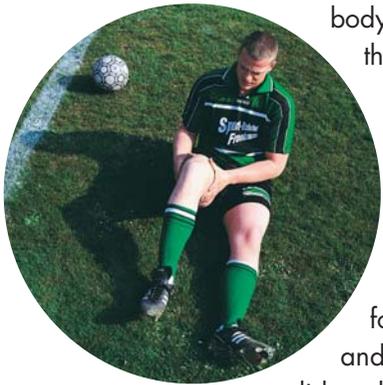
The human body needs energy.

The body's own cells are able to extract energy from food. This energy is necessary for us to be able to walk, speak, think, grow, regenerate, digest, excrete... etc. Ultimately, all organs and muscles have to be supplied with energy for them to work in the right way. Energy is generated in cellular metabolic processes from the food we eat. Fats, carbohydrates and proteins play a particular role. The oxygen we breathe is also of vital importance for the production of energy. If sufficient oxygen is present, then 18-times more energy can be generated from the same amount of food.

But so-called metabolic end products are also produced besides energy.

These are substances which can no longer be used by the body and therefore have to be excreted via the intestine, the kidneys, the skin or the lungs. One can consider them as metabolic waste. Many of these waste products are acidic and have to be neutralised on their way to the excreting organ. If cells try to produce energy with too little oxygen, for example, particularly high levels of acidic waste products arise. This is most noticeable with muscle cramps, for example. In this case, a muscle had to do work and needed to produce energy for this purpose, but did not have enough oxygen available. This is why training

exercises in sport studios are recommended under aerobic conditions (aerobic means that the cells receive enough oxygen).



The human body also needs vitamins and minerals.

The body cannot produce minerals itself. They have to be absorbed from the food. They are present in all tissues and cells and are needed there for various metabolic processes. Alkaline mineral salts play an important role in the neutralisation of acids. The bones contain particularly large amounts of minerals. Calcium, for example, makes up 2% of our body weight, 99% of which is to be found in bone.

The pH-value is a measure of the acid-base ratio in a liquid.

Blood in the human body has a slightly alkaline pH-value. This is important for the body to function optimally. So that the pH-value of the blood can be kept constant, it has so-called buffer substances at its disposal. These act so that the pH-value of the blood does not change straight away as soon as acids are released into the blood. With the help of buffer substances, acids can be balanced (neutralised) and the pH-value can be kept constant.

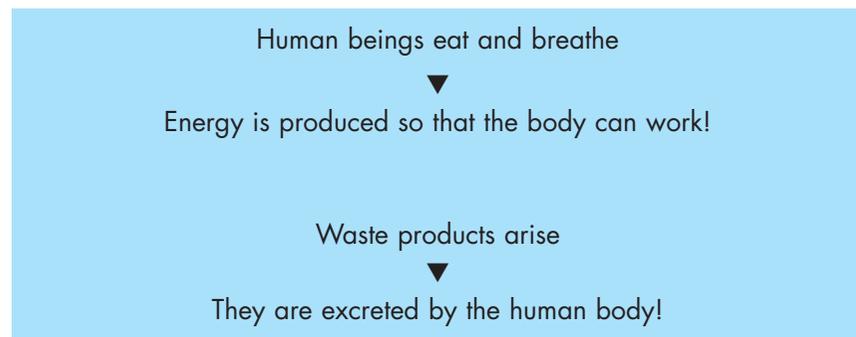
Acidic metabolic waste products are transported in the blood to the excretory organs. Carbonic acid, for example, is exhaled as carbon dioxide via the lungs. Other acids are eliminated via the kidneys and excreted in the urine.

The term acid-base balance is used to describe the interchange of both components. In the ideal case, a balance exists between acidic and alkaline mineral salts just as a balance is maintained between the uptake of food and the later excretion of metabolic waste products.



What is meant?

Summary: The function of the human body



If the body produces more acidic metabolic waste products than can be neutralised and excreted, this will result in the long term in hyperacidity of the body. The acid-base balance loses its equilibrium and optimal functioning of the body will be lost. The body now resorts to mechanisms to counteract this imbalance.

For example, the body stores excess acid first of all in the connective tissue, so that this can later be released and excreted as soon as sufficient alkaline mineral salts are available again in the blood. In the case of a persisting deficiency of alkaline mineral salts and, at the same time, continuing hyperacidity, the body resorts to using its own mineral deposits, e. g. calcium from the bones, which over time can then result in osteoporosis.

The hyperacidity described here does not occur suddenly.

This is a slow process – sometimes taking years. From the simplified sequence shown in the box on page 8, it is apparent that the system contains a number of “adjustment screws”. Dietary habits in the developed nations which include more than 25% acid-forming foodstuffs (meat, fish, cheese, sausage, etc.) are very common. This promotes both hyperacidity as well as a lack of minerals in the body.

Meat consumption is too high.

Put in another way, this means: **Fruit and vegetable consumption is too low** (fruit and vegetables belong to the alkaline-forming foodstuffs.) Only a few people follow the recommendations of the German Nutritional Society to eat fruit and/or vegetables five times daily. This is how a vicious circle can start: Acids which are produced have to be neutralised by alkaline mineral salts. Because mineral salts are lacking, the body becomes too acidic.

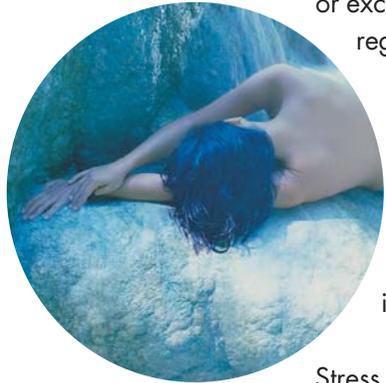




How can it arise?

When looking for the cause of hyperacidity, not only diet but also respiration as well as excretion have to be considered. Lack of exercise in the fresh air impairs an optimal supply with oxygen. Insufficient fluid intake prevents optimal excretion via the kidneys as well as through the skin (sweating). Disturbances of intestinal function or the intestinal flora also affect the acid-base balance. Putrefaction products can also have an acidic effect on the body.

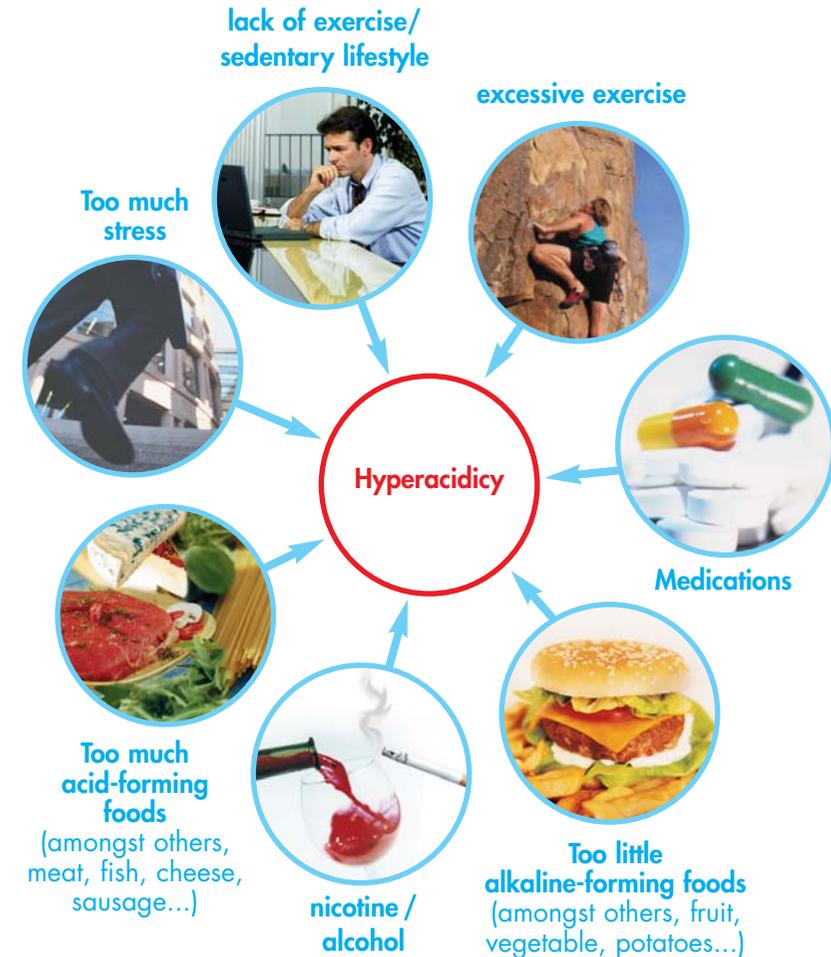
Individuals who as a result of serious illnesses have problems with food uptake in the gastro-intestinal tract, cellular metabolism, respiration or excretion are advised to always consult a therapist with regard to hyperacidity.



In disturbances of intestinal function or the intestinal flora, a therapist should also be consulted to discuss the best course of action in detail. Regeneration of the intestinal flora, as well as compensating for any disorders, should go hand in hand with achieving the right acid-base balance.

Stress, inflammatory processes and medicines also have a negative influence on the acid-base balance, if the latter are converted into acids prior to excretion.

Summary of negative influences on the acid-base balance:



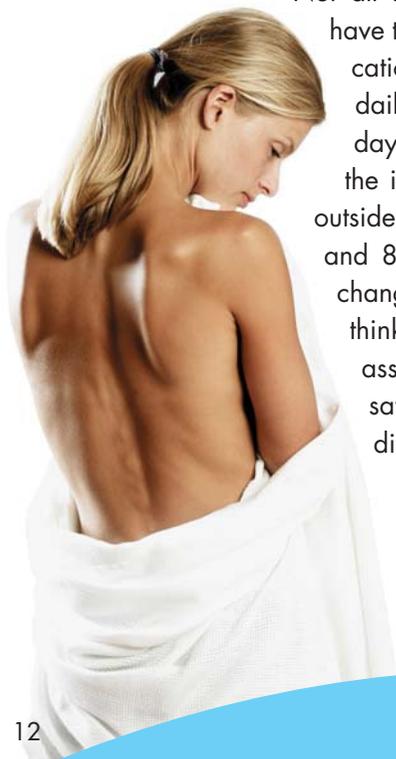


How can it be determined?

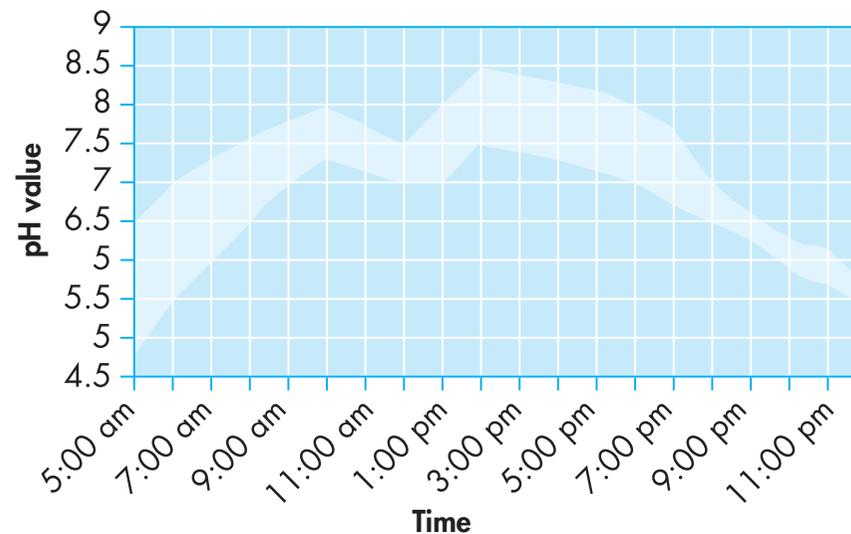
The easiest way to determine your personal acid-base status is to measure the pH-value of the urine. Suitable test strips can be obtained from your therapist or pharmacy. Make sure the pH testing range covered is between 5.0 and 8.0. You should measure the pH-value to start with each time you go to the toilet over a period of several days, noting the time and the pH-value. Also, keep a record of what you eat and drink. Then enter the values in a chart.

Ideally, the pH-values should vary over the course of the day (see illustration), and there should be some pH-values above 7 (pH 7 is the neutral pH-value).

Not all the pH-values recorded throughout the day have to be above pH 7, as this can also be an indication of a regulatory disorder. If your personal daily pH profile deviates strongly several times a day from the indicated "ideal curve" shown in the illustration, or if your results are significantly outside the optimal range of values between 5.0 and 8.0, you should feel encouraged to make a change. You will see - it is easier than you might think right now! Your personal daily chart will assist you to monitor the process of 'neutralisation'. However, it is also a solid basis for discussion with a therapist.



Daily urinary pH-value profile





This is what you can do!

With regard to dietary hyperacidity, there are a number of things you can do. The mainstay is a change of diet and a food supplement using pH-balance PASCOE®. This product can positively influence your mineral and acid-base balance.

Change of diet

Rearrange your diet so that alkaline-forming foodstuffs make up approx. 75%, and hence the major part, of your nutrition. Vegetarian foods belong to the group of alkaline-forming foodstuffs. These include fruit, vegetables, potatoes, cabbage, lettuce and herbs (including herbal teas). Acidifying foodstuffs comprise of meat, poultry, fish, sausage, cheese, cottage cheese, yoghurt, cereal products and sweets. A list of different foodstuffs can be found in this guide on pages 24–26.

The dietary table reflects only the primary effects on the acid-base balance. Coffee, for example, belongs to the alkaline-donors due to its high potassium content. However, too much coffee leads to a stress reaction which, on the other hand, can lead to hyperacidity. Similarly, the data for sugar, marmalade and honey appear to be contradictory. Primarily, these foodstuffs do not lead to hyperacidity. Too many sweet things can negatively affect the intestinal flora, which can contribute to hyperacidity as a secondary effect. Under no circumstances should you completely avoid foodstuffs from the acidifying group.



They also provide valuable vitamins, minerals and proteins, which are necessary for the body. As is often the case, it is the balance which matters.

An example: In order to compensate for the excess acid which is produced by 200 g beef, the consumption of approx. 250 g kohlrabi, 1.6 kg fresh peas or 400 g cauliflower is necessary.

Drink a lot

Make sure you drink enough. However, a word of advice: so-called neutral fluids such as water or herbal teas are preferable (not coffee, black tea or alcohol).

Exercise

Take regular exercise. A walk through the forest or a short bicycle ride rather than using the car not only optimises the oxygen uptake, but also promotes the expiration of carbonic acid in the form of carbondioxide.

Avoid stress

Avoid stress as far as possible. Try not to get upset so often (avoid being 'sour'!). Instead, think positive and smile more frequently.

Stimulate the excretion of acid

Encourage the excretion of acid via the skin, e.g. by regular visits to a sauna. Also, avoid producing stress in this case (not too hot and not too long).





This is what you can do!

Food supplement

Supplement your diet, if necessary, with **pH-balance PASCOE®**. **pH-balance PASCOE®** follows the recommendations of Friedrich F. Sander, a pioneer in the field of hyperacidity. The ingredients of **pH-balance PASCOE®** have been optimised in particular with regard to its balance of minerals, according to the latest findings. Thus, this product contains alkaline magnesium carbonate, in addition to Sander's original formulation.

*Free from
too much acid*



The benefits for you

Sander's optimized formulation

- high acid-binding capacity
- ideal Ca/Mg-ratio

The 'smart' tablet

- small and compact
- easy to swallow
- does not disintegrate in the mouth
- neutral in taste
- ideal when travelling



Recommendations for general use are given in the following table:

BASENTABS pH-balance PASCOE®	
Daily dose	Take 2 tablets with plenty of water as described 4 times daily, 1–3 hours after meals.
Benefits	Small and compact, hence easy to swallow, neutral in taste, practical to carry.

Acid	The chemical opposite of a base. Both neutralize one another. Acidic solutions are corrosive and have a pH-value between 0 and 7.
Autonomic nervous system	Synonymous for the vegetative nervous system.
Base	Alkali, the chemical opposite of an acid. Both neutralize one another. Alkaline (basic) solutions have a pH-value above 7.
Bicarbonate	Older term still used for hydrogen carbonate. These are water-soluble salts of carbonic acid, e.g. potassium bicarbonate, sodium bicarbonate. An ingredient of alkaline products, such as pH-balance PASCOE®.
Buffer systems	Fluctuations in the acid-base balance cannot be avoided and arise constantly in all humans. However, in order to maintain a consistent pH-value despite this, the body uses different buffers (e.g. proteins, phosphates, bicarbonate, haemoglobin) which absorb (buffer) excess acids or bases. The bicarbonate buffer is used to 53 % in the blood and plays a central role in maintaining the acid-base balance. If the buffer systems should become 'overtaxed', this can lead to acidosis or alkalosis. The liver and kidneys are involved in the regeneration of the buffers.
Carbonates	Salts of carbonic acid (carbonates).
Carbonic acid	Weak acid only occurring in aqueous solution, which is produced by passing carbon dioxide into water.
Carbon dioxide	A colourless and odourless gas which is easily soluble in water, arising, amongst other things, as a product of animal and human respiration and by the combustion of carbon-containing substances.

Carbohydrates	Substances belonging to the staple foods, which consist of carbon, hydrogen and oxygen and occur predominantly in vegetable foodstuffs. They include, amongst other things, all types of sugar and starch, and almost all fibres. Ideally, carbohydrates should account for 50-60 percent of daily energy intake.
Cell (somatic cell)	Basic module of the human body, the smallest independently living functional unit within a superordinate structure. In their general layout, all cells are alike; however, each cell variant is designed to carry out a specific task within the organism.
Cell metabolism	Every endogenous cell has a metabolism with which absorbed substances are converted into compounds needed by the cell (for energy production or cell development). Resulting end products are released to the surrounding environment.
Connective tissue	Principally serves as interstitial tissue in the body by filling the space between organs; it encloses the organs as a covering substance and permeates these as structural tissue. Its gel-like matrix is also very important for the exchange of substances between the cells and the blood.
Denaturated	This refers to changes occurring to food by chemical or mechanical procedures during its processing. Denatured foodstuffs generally lead to an increase in acidity of the human body.
Digestive system	This refers to all organs responsible for digestion, e.g. mouth, oesophagus, stomach, small and large intestine, rectum and anus. Other organs involved in digestion include the liver, pancreas and gallbladder.
Dysbalance	This means a disturbed balance, a disturbance of equilibrium.

Fats	These are natural substance compounds. Fat in foods consists mainly of triglycerides, which are composed of one glycerine molecule and three fatty acids, and is needed by all cells of the body, amongst other things, for the structure of the cell wall; it is also the main source of energy. The recommended daily intake is between 80 to 100 grams; however, this is often very much higher in the western developed nations, which increases the risk of obesity and cardiovascular disease, for example.
Heartburn	Burning pain caused by the reflux of gastric acid into the oesophagus.
Hydrochloric acid	Constituent of the gastric juice which ensures a low pH-value (1–2), initiates the breakdown of nutritional proteins, converts the pro-enzyme pepsinogen secreted by the stomach's parietal cells into pepsin (for protein cleavage) and kills bacteria.
Indicator	A substance or liquid which indicates a certain chemical reaction by a colour change.
Intestinal flora	These are micro-organisms, which include bacteria and fungi, that perform important health functions, e.g. defence against pathogens or the decomposition of indigestible dietary fibre. Various factors can significantly affect the intestinal flora, such as imbalanced diet, infections or medications.
Kidneys	The two human kidneys are located adjacent to the rear wall of the body to the left and right of the spinal column. They are shaped like beans and measure approx. 10 x 5 cm. They are the organs of excretion for urinary substances (e.g. uric acid), excess electrolytes (e.g. salts, acids, bases), foreign substances and water.
Lactic acid	Substance produced by lactic bacteria, which occurs in the intestine of the human body, for example, as well as in fermented foodstuffs (e.g. curdled milk) and fermented vegetables (e.g. sauerkraut).

Lipids	General term for fats and fatty substances; they are all water-insoluble.
Lung	Sponge-like respiratory organ situated behind the ribcage in the thoracic cavity of human beings. Consists of two lobes and enables gas exchange between the air and blood: Oxygen is absorbed, carbon dioxide is released.
Minerals	Inorganic substances, such as calcium, phosphorous, magnesium or potassium, which occur in both plant as well as animal foodstuffs and are needed for the development of endogenous substances (e.g. bone tissue) and various regulatory functions by the body. A lack of minerals can lead to deficiency diseases; an excess can lead to symptoms of intoxication.
Muscle cells	Parts of the muscular system required for movement and heat balance. Muscle cells resemble other endogenous cells in their structure; however, they contain complex, highly concentrated protein structures which contract (draw together) upon nerve stimulation. ATP is the sole energy source for the contraction of muscles.
Parasympathetic nervous system	Parasympathetic nervous system. Part of the vegetative nervous system – stimulates and controls involuntary organ functions which cannot be influenced. The parasympathetic nervous system is located in the brain stem and the sacral region of the spinal cord; it acts as an antagonist and, hence, an opponent to the sympathetic nervous system – conserving and building up energy in phases of rest and relaxation. For example, it lowers the heart rate and constricts the pupils.

Parietal cells	A part of the gastric glands in the gastric mucous membrane, which produce hydrochloric acid and the intrinsic factor, and also facilitate the uptake of vitamin B12 in the lower small intestine. When hydrochloric acid is released inside the stomach, sodium bicarbonate is formed at the same time and released into the blood.
pH value	(from the Latin Potentia hydrogenii, concentration of hydrogen ions) Chemical measure for the strength of an acid (pH value between 0 and 7) or an alkaline (pH value between 7 and 14).
Proteins (in the intestine)	Proteins – collective term for natural substances made up exclusively or predominantly of amino acids; they belong to the staple foods. If more than 100 amino acids are linked together, they are referred to as proteins. Proteins define the structure, function and metabolism of all living cells and tissues. About 10 kilograms of an adult's body weight is made up of proteins.
Putrefaction	This refers to bacterial decomposition of indigestible dietary protein in the large intestine with the formation of sometimes foul smelling decomposition products. These often poisonous substances are detoxified in the liver.
Stress	Excessive strain, disturbance to the normal physical state or bodily functions through external physical influences, e. g. injury or psychological factors, such as fear. Stress is regarded as a risk for many different illnesses, including peptic ulcers or cardiovascular disease.
Sweat glands	Glands found in the human subcutaneous tissue. The secretion of perspiration (consisting of water, urea, salts, fats etc.) serves to regulate body temperature. There are two types: the large sweat glands (e.g. under the arms, in the chest and genital regions) which secrete viscous perspiration, and the small sweat glands (e.g. on the forehead, palms of the hands and soles of the feet) which secrete clear, watery perspiration.

Sympathetic nervous system	Sympathetic nervous system. Part of the vegetative nervous system, which stimulates and controls involuntary organ functions. The sympathetic nervous system is located in certain regions of the spinal column and is dominant in physical or psychological stress situations. It acts to discharge energy and is responsible for catabolic processes as an antagonist of the parasympathetic nervous system. For example, it increases the heart rate and dilates the pupils.
Uric acid	This is a chemical compound containing nitrogen, which arises through the normal decomposition of cells and through the metabolism of purines, which are absorbed with the diet. As a rule, it is excreted as a waste product in the urine. However, at a certain concentration it can also crystallize out and form urinary stones.
Vegetative	Part of the nervous system which controls involuntary bodily function, i.e. those which cannot be influenced and are performed unconsciously, such as digestion, heart beat, respiration, metabolism and the function of glands in the hormone system.
Vitamins	Complex organic compounds needed by the body in small amounts for growth, regeneration and metabolism. They are an important part of a balanced diet.

Table of foods

Estimated potential renal acid load (PRAL, mEq/100g) of 114 frequently consumed foods and beverages (per 100g). Amended according to Remer and Manz, Journal of the American Dietetic Association 1995;95: 791-797.

ALKALINE					ACIDIC						
-20	-15	-10	-5		5	10	15	20	25	30	
GRAIN PRODUCTS											
					<ul style="list-style-type: none"> rye mixed-grain bread rye bread wheat mixed-grain bread wheat bread white bread <ul style="list-style-type: none"> Cornflakes rye crisp bread <ul style="list-style-type: none"> egg noodles oat flakes rice, unhusked rice, husked parboiled rice <ul style="list-style-type: none"> rye wholemeal flour spaghetti wholemeal spaghetti wheat flour wholemeal wheat flour 						
VEGETABLES											
					<ul style="list-style-type: none"> asparagus broccoli spring carrots cauliflower celery <ul style="list-style-type: none"> chicory cucumbers aubergine leek lettuce, average of 4 sorts <ul style="list-style-type: none"> iceberg lettuce mushrooms onions peppers potatoes radish spinach tomato juice tomatoes courgette 						

ALKALINE					ACIDIC						
-20	-15	-10	-5		5	10	15	20	25	30	
PULSES											
					<ul style="list-style-type: none"> green beans <ul style="list-style-type: none"> lentils, green and brown, dried peas 						
FRUITS NUTS AND FRUIT JUICES											
					<ul style="list-style-type: none"> raisins apple juice, unsweetened apples, 15 sorts, with skin, average apricots bananas blackcurrants <ul style="list-style-type: none"> cherries <ul style="list-style-type: none"> grapefruit juice, unsweetened hazelnuts kiwi <ul style="list-style-type: none"> lemon juice orange juice, unsweetened oranges peaches <ul style="list-style-type: none"> peanuts, untreated pears, 3 sorts, with skin, average pineapple <ul style="list-style-type: none"> strawberries walnuts watermelons 						
BEVERAGES											
					<ul style="list-style-type: none"> normal-strength beer <ul style="list-style-type: none"> Coca-Cola cacao, made of skimmed milk (3.5%) coffee, infusion, 5 min. mineral water (Apollinaris) <ul style="list-style-type: none"> mineral water (Volvic) red wine <ul style="list-style-type: none"> Indian tea, infusion dry white wine 						
FATS AND OILS											
					<ul style="list-style-type: none"> butter margarine olive oil sunflower oil 						

pH-balance PASCOE

**21
test strips
included**

*Free from
too much acid*



The advantages are:

- **Sander's balanced alkaline composition** with ideal 3:1 calcium/magnesium ratio
- **Very high acid-binding capacity**
- **Small and compact** and hence easy to swallow
- **Neutral in taste**
- **Sugar-free, lactose-free and gluten-free**
- **Ideal when travelling**
- **Including pH-test strips**

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