

Acids play an important role in nutrients and drinks. They are responsible for nutrients' taste and keeping quality.

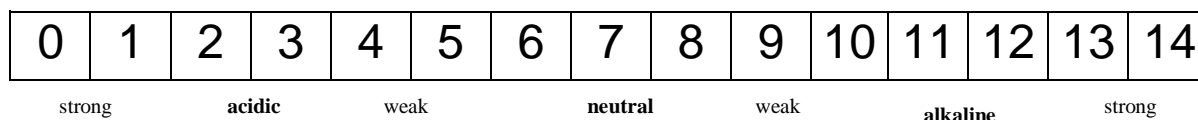
Alkalis are of less significance to nutrition.

A solution may be:

<b>acidic</b>	solution tastes sour and mainly contains 'acid particles' (=hydrogen ions) $\text{H}^+$
<b>alkaline</b>	solution is soapy to touch and tastes boring; mainly contains 'alkali particles' (=hydroxide ions) $\text{OH}^-$
<b>neutral</b>	no typical taste; acid particles and alkali particles balance each other

The **pH-value** is a number that tells us WHICH kind of particles are contained in a solution ( $\text{H}^+$  or  $\text{OH}^-$ ). In addition, the **pH scale** shows the **strength** of an acid or an alkali, that is the *concentration* of hydrogen ions  $\text{H}^+$  and hydroxide ions  $\text{OH}^-$ .

### pH scale



Actually, a change of pH from one number to the following means that the substance is **ten times more** acidic or alkaline.

For example: The pH of rain water decreases from 5 to 4 which means that the acid in the rain has become 10 times stronger, the rain has become ten times more acidic.

The more acidic the solution is, then the lower the pH number is.

The more alkaline the solution is then the higher the pH number is.

### Measuring pH-values

In order to measure pH values very accurately, we use **pH meters**. If we only need a rough estimate of the pH number, we use **indicators**.

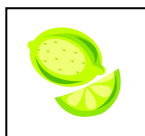
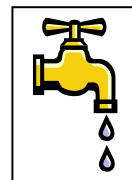
**Indicators** are dyes that change colour according to whether the solution is acidic or alkaline.

### Neutralisation

If you add just the right amount of acid to an alkali that is of the same strength, the two cancel each other out. The acid loses its power and in the solution **neutral water** and a **salt** are formed.



# EXPERIMENTS



## E 1: Measuring pH-values

	acids /alkalis	pH (indicator)	pH (pH- meter)
lemon			
tomato			
vinegar			
coke			
fruit tea			
tap water			
mineral water			
baking powder			
dishwasher tabs			

## E2: Making an indicator

In the first stage, cut some red cabbage, put it in hot water and bring to the boil.

Then, filter the suspension, collect the filtrate and distribute in three test tubes.

Finally, add a few drops of vinegar to test tube 1

add a a bit of tap water to test tube 2.

add a bit of baking powder to test tube 3.

test tube	reagent	reaction observed: colour
1		
2		
3		

