

Antacid Tablets

Pharmaceutical companies develop medicines and other healthcare products to help people. One company, GlaxoSmithKline, make a product called *Tums*. *Tums* are antacid tablets which are used to neutralise stomach acid.

Your stomach contains hydrochloric acid, which helps the digestive process. Sometimes, if too much acid is produced, it can cause acid reflux where acid from the stomach gets into the oesophagus. Antacid tablets help to reduce the unpleasant feelings caused by acid reflux.



Tums tablets

image credit: Karl Thomas Moore, via Wikimedia Commons under CC BY-SA

Know

1. Hydrochloric acid is a strong acid.
 - a. What does the phrase 'strong acid' mean?
 - b. Give an example of another strong acid.
2. What is the pH of a neutral solution?
3. How can you make an acid less concentrated?

Apply

The active ingredient in antacid tablets is calcium carbonate, which is an insoluble base. When a person takes the antacid tablet, a neutralisation reaction takes place in the stomach.

4. Predict what will happen to the pH of the stomach after taking a *Tums* antacid tablet.
5. A student is investigating the effectiveness of *Tums*. She takes several tablets and crushes them using a mortar and pestle. She then adds spatula equivalent doses to a beaker containing hydrochloric acid.

The student observes and monitors the reaction by testing the pH after each spatula of *Tums* is added. She does this by dipping a glass rod into the beaker, transferring a drop to UI paper, and writing down the colour.

- a. Complete the table with the pH of the reaction after each spatula of *Tums* is added.
- b. Plot spatula doses vs. pH. Add a **smooth** line of best fit.
- c. Describe the trend shown in your graph.

Number of spatula doses of crushed Tums	Colour of UI	pH
0	red	
1	red	
2	orange	
3	orange	
4	mustard	
5	yellow	
6	mid green	
7	dark green	
8	blue green	
9	blue	
10	blue	

Extend

There is a reaction between calcium carbonate from the *Tums* tablets and the hydrochloric acid in the stomach.

- Write a word equation for the reaction between hydrochloric acid and calcium carbonate.
- State the name of the salt produced in this reaction.
- When the student monitored the reaction, as well as a change in pH she also observed another visible sign that the neutralisation reaction was taking place. What did she see?



nustem.uk/worksheet/antacids
nustem.uk/employer/gsk
Worksheet version: 1.0, 2018-06-21

| Download this worksheet
| More about GlaxoSmithKline