

Puzzling Plants

*Book Reference:
Herbal Medicine,
page 180.*

MANY HUNDREDS OF YEARS before Linnaeus developed our current system of classification (back in 1753), Muslim scientists were collecting vast numbers of plant species and sorting them according to their uses. Their knowledge of herbal medicines was extensive and impressive, and coupled with access to information on earlier attempts to classify plants, they developed sophisticated methods of classifying the living world. One Muslim scientist – Ibn al-Baytar of Malaga, Muslim Spain – studied 3000 plant species and their medical properties, and recorded his findings in a vast encyclopedia. The scientific skill of ‘try it and write what it does’ goes back a long way! In this activity, students classify useful plants before exploring the pros and cons of herbal medicine in today’s world.

Curriculum links

11-14

QCA 7d - variation and classification

- compare different styles of recording observations
- explore different ways of classifying living things

QCA 9m - investigating scientific questions

- consider the strength of evidence in relation to the question investigated

Learning objectives

Students will:

- Learn about the pioneering work of Muslim scientists on plant classification
- Explore the pros and cons of herbal medicine in today’s world

Running the activity

Starting the activity

Display **Activity 5a** (either projected or as an OHT). Point out the differences in plant knowledge between pre-Enlightenment Europeans and scientists from the Muslim world.

Ask students, in small groups, to

- discuss the three questions at the bottom of the page
- classify the plants on cards made from **Activity 5b** into sensible groups

Encourage students to draw out these points in their discussions: plants were used as remedies, for food, clothing and building; Muslim scientists were particularly interested in recording the medicinal properties of plants; they used the skills of collecting, observing, recording data and classifying.

Running the activity continued...

Encourage students to try different methods of classifying the plants on the cards; part way through this activity, reveal that Muslim scientists were particularly interested in classifying plants according to remedy, and get students to try doing this themselves.

Running the main part of the activity

Ask students – either individually or in small groups – to read the information ‘from the packets’ of herbal and conventional remedies (**Activity 5c, 5d, 5e**), decide which ones they would choose if required, and justify their choices. Their answers can be used to discuss issues such as:

1. How do we know the remedies are effective (what evidence is there)?
2. Perceptions about herbal remedies being more natural or ‘better’ than artificial ones, especially with the sleeping pills example where the active chemicals in both the herbal and the conventional medicine are essentially the same (alkaloids)
3. Should we always use drugs (natural or artificial) anyway?

Ask students to prepare for the debate, as described on **Activity 5f**. Make sure you have some students planning to speak for each ‘side’! Then run one large debate or get students debating in small groups.

Running the plenary

Lead a discussion to bring out the following points:

- Much of what scientists do today is trial and error
- Hundreds of years ago Muslim medics and plant scientists gathered vast amounts of knowledge about plants. Many of their findings are still useful in today’s world

Web links

<http://observer.guardian.co.uk/magazine/story/0,11913,1157031,00.html>

This is an article discussing the new EU regulations (from a particular viewpoint!)

<http://www.muslimheritage.com/topics/default.cfm?articleID=525>

More details about the work of the Muslim scientists in this activity

<http://muslimheritage.com/topics/default.cfm?ArticleID=515>

An article about agricultural developments in the Muslim world

**500 - 1500
Muslim World**

Puzzling plants

**500 - 1500,
Europe**



We know *loads* about plants. They're amazing!



I've observed and classified *thousands* of plant species. It's taken years! Look – here's the plant encyclopaedia I wrote – it's massive!



We're only interested in plants we can eat. There aren't many of them.

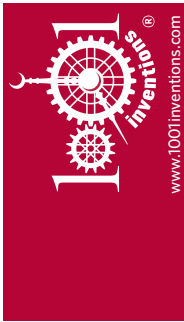


Why did Muslim scientists collect so much plant knowledge?

Discuss

- * What do you think people in the Muslim world used plants for?
- * What do you think scientists wrote down about plants?
- * What scientific skills were these early scientists using?

Classify the 12 useful plants on page 2 into sensible groups.



Coconut Palm



Part used: whole plant mostly nut and leaves

Uses:

- * biofuel
- * food
- * thatching

Peppermint

Mentha piperita



Part used: whole plant

Uses:

- * helps digestion
- * reduces nausea
- * decongestant
- * flavouring

Jojoba

Simmondsia chinensis



Part used: seeds

Uses:

- * lubricant
- * floor polish
- * cosmetics
- * to treat skin problems like burns, sores and acne
- * possible future fuel

Banana

Musa sp.



Part used: fruit and leaves

Uses:

- * food
- * cooking
- * roofing material
- * weaving baskets

Ginger

Zingiber officinale



Part used: rhizome

Uses:

- * helps digestion
- * reduces nausea
- * reduces cold and flu symptoms
- * flavouring

Agrimony

Agrimonia eupatoria



Part used: whole plant

Uses:

- * heals wounds and bruises
- * heals digestion
- * improves bladder control

Aloe Vera

Alo barbadensis




Part used: sap from leaves

Uses:

- * speeds wound healing
- * laxative
- * treats skin problems like

Lady's Mantle

Alchemilla vulgaris




Part used: whole plant

Uses:

- * controls bleeding
- * controls diarrhoea

Garlic

Allium sativum




Part used: bulb

Uses:

- * protects against heart disease
- * kills fungi and bacteria
- * clears chest infections
- * flavouring

Empress Candlestick

Senna alata




Part used: leaves

Uses:

- * treats fungal diseases
- * treats stomach problems
- * making soap

Myrrh

Commiphora mormol



Part used: gum resin from stem

Uses:

- * fights gum infections
- * cleans wounds
- * reduces bruising

Jojoba

Simmondsia chinensis



Part used: seeds

Uses:

- * lubricant
- * floor polish
- * cosmetics
- * to treat skin problems like burns, sores and acne
- * possible future fuel

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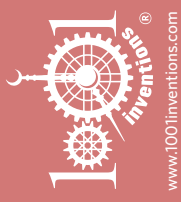


Part used: seeds

Uses:

- * lubricant
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1 In the 21st century, would you still choose herbal medicine?



Herbal medicine

Garlic capsules

A traditional remedy for the symptoms of coughs and colds. Can also benefit the heart and circulatory system. Has anti-bacterial properties too.

Contains

Soya bean oil and garlic oil in a gelatine capsule.
All natural ingredients – no known side effects.



My comments



If I were suffering from *cold* and *flu* symptoms, I would take _____ because...

Handwriting lines for the student to write their comments.

Conventional medicine

Anadin paracetamol

For the effective relief of mild to moderate pain including headache, migraine, toothache, period pains, aches and pains, rheumatic pain, feverishness and symptoms of colds and influenza.

Contains

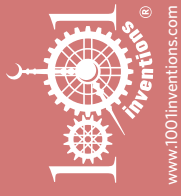
Paracetamol and hydroxypropyl methyl cellulose (E464). Do not take with any other paracetamol-containing products. Immediate medical advice should be sought in the event of an overdose, even if you feel well.

Do not take if:

- * you are suffering from kidney or liver disease.
- * you are allergic to paracetamol or any of the other ingredients listed.



2 In the 21st century, would you still choose herbal medicine?



Herbal medicine

Neem

is a powerful anti-bacterial and anti-fungal herb that is extremely bitter, with powerful detoxifying chlorophyll, and acts as an invaluable skin and blood cleanser. It is very effective for normalising gut bacteria.



Contains

Extract and powder of Neem Leaf.

Do not use if pregnant



My comments



If I were suffering from *spots*, I would take

_____ because...

Conventional medicine

PanOxyl Bar

Helps clear existing acne blemishes and helps prevent the development of new acne pimples, blackheads and whiteheads.



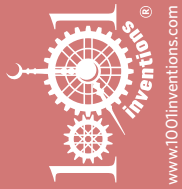
Contains

10% Benzoyl Peroxide. Cetostearyl alcohol, cocamidopropyl betaine, corn starch, glycerin, hydrogenated castor oil, mineral oil, PEG-14M, silicon dioxide, sodium potassium lauryl sulfate, titanium dioxide, water.

Side effects

This product may cause irritation, characterized by redness, burning, itching, peeling, or possible swelling. Keep away from eyes, lips, and mouth. Avoid contact with hair and fabrics.

3 In the 21st century, would you still choose herbal medicine?



Herbal medicine

Californian poppy

Contains alkaloids and in particular one called californidine. This plant is a natural hypnotic: it prepares for peaceful sleep and reduces sleeping problems, particularly nightmares, waking during the night and difficulties in falling asleep. It is also an anxiolytic and a sedative: it helps anxious people of all ages recover and have a calm life without stress.

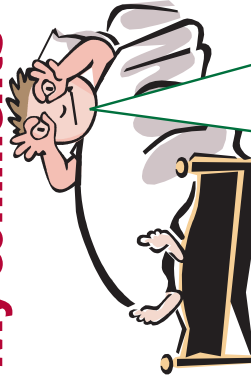


Contains

Californian poppy aerial flowered, part powder.

Do not use if pregnant

My comments



If I were having **difficulty in sleeping**, I would take _____ because...

Conventional medicine

Sleeping pills e.g. zopiclone

If they haven't been prescribed to you personally then it is illegal to take them.

Contains

Zopiclone, lactose, hydroxypropyl methyl cellulose, microcrystalline cellulose and sodium starch glycollate.

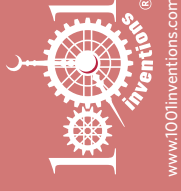
Side effects

Daytime drowsiness and a bitter taste in the mouth.

Warnings

Dependence can develop after as little as one week of continuous use.

The EU is debating new laws to control herbal medicines and food supplements.



Plan to play a part in the debate.

Choose one of these roles:

- * an EU official who believes the regulations are vital to protect citizens.
- * the director of a shop chain that sells herbal medicines.



I'm convinced I escaped a cold this year as a result of taking those garlic supplements



The products for sale must be proven to be safe



Chemicals are chemicals – they can be dangerous whether herbal or synthetic



Without laws, some manufacturers could make false claims about products

Daily News: New laws may hit herbal remedies

New European regulations may soon prevent the sale of many of Britain's favourite food supplements. Opinion about the new regulations is sharply divided. Some believe them to be a vital safety measure, and say that they will prevent the sale of substances that may be harmful. Others believe the laws are yet another example of the EU unnecessarily interfering with people's lives.

Fighting sickness

In the UK, we realise that diet is directly linked to our health. We regard vitamin and mineral supplements as foods, not medicines. Many people buy these supplements – and herbal medicines – as part of their fight against illness.

Restricted list

Soon, only those vitamins and minerals listed by the European Union Food Supplements Directive will be able to be sold legally. To start with, this will mean the loss of at least 270 nutrient supplements. Later, all nutritional supplements will be scrutinised.

Herbal medicines hit too

The EU plans to restrict the sale of herbal medicines, too. It proposes a register of herbs which have been 'in safe use for 30 years'. It will not be possible to use newly discovered herbal medicines immediately.