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Frankincense: Could it be a cure for cancer?

Frankincense resin, and incense

The gift given by the wise men to the baby Jesus probably came across the deserts from Oman. The BBC's Jeremy Howell visits the country to ask whether a commodity that was once worth its weight in gold could be reborn as a treatment for cancer.

Oman's Land of Frankincense is an 11-hour drive southwards from the capital, Muscat.

Most of the journey is through Arabia's Empty Quarter - hundreds of kilometres of flat, dun-coloured desert. Just when you are starting to think this is the only scenery you will ever see again, the Dhofar mountains appear in the distance.

On the other side are green valleys, with cows grazing in them. The Dhofar region catches the tail-end of India's summer monsoons, and they make this the most verdant place on the Arabian peninsula.

Warm winters and showery summers are the perfect conditions for the Boswellia sacra tree to produce the sap called frankincense. These trees grow wild in Dhofar. A tour guide, Mohammed Al-Shahri took me to Wadi Dawkah, a valley 20 km inland from the main city of Salalah, to see a forest of them.

"The records show that frankincense was produced here as far back as 7,000 BC," he says. He produces an army knife. He used to be a member of the Sultan's Special Forces. With a practised flick, he cuts a strip of bark from the trunk of one of the Boswellia sacra trees. Pinpricks of milky-white sap appear on the wood and, very slowly, start to ooze out.

Boswellia sacra produces the highest-quality frankincense

"This is the first cut. But you don't gather this sap," he says. "It releases whatever impurities are in the wood. The farmers return after two or three weeks and make a second, and a third, cut. Then the sap comes out yellow, or bright green, or brown or even black. They take this."

Shortly afterwards, a frankincense farmer arrives in a pick-up truck. He is white-bearded, wearing a brown thobe and the traditional Omani, paisley-patterned turban.

He is 67-year-old Salem Mohammed from the Gidad family. Most of the Boswellia sacra trees grow on public land, but custom dictates that each forest is given to one of the local families to farm, and Wadi Dawkah is his turf.

Camel train

He has an old, black, iron chisel with which he gouges out clumps of dried frankincense.

"We learnt about frankincense from our forefathers and they learnt it from theirs" he says. "The practice has been passed down through the generations. We exported the frankincense, and that's how the families in Dhofar made their livings."

Salem Mohammed: Young people prefer careers in oil or government

And what an export trade it was. Frankincense was sent by camel train to Egypt, and from there to Europe. It was shipped from the ancient port of Sumharan to Persia, India and China. Religions adopted frankincense as a burnt offering.

That is why, according to Matthew's Gospel in the Bible, the Wise Men brought it as a gift to the infant Jesus. Gold: for a king. Frankincense: for God. Myrrh: to embalm Jesus' body after death.

The Roman Empire coveted the frankincense trade. In the first century BCE, Augustus Caesar sent 10,000 troops to invade what the Romans called Arabia Felix to find the source of frankincense and to control its production. The legions, marching from Yemen, were driven back by the heat and the aridity of the desert. They never found their Eldorado.

Oman's frankincense trade went into decline three centuries ago, when Portugal fought Oman for dominance of the sea routes in the Indian and the Pacific Oceans.

Salalah's Haffa souk: The place to buy Omani brands such as Royal Hougari

Nowadays, hardly any Omani frankincense is exported. Partly, this is because bulk buyers, such as the Roman Catholic Church, buy cheaper Somalian varieties. Partly, it is because Omanis now produce so little.

"Years ago, 20 families farmed frankincense in this area," says Salem Mohammed Gidad. "But the younger generation can get well-paid jobs in the government and the oil companies, with pensions. Now, only three people still produce frankincense around here. The trade is really, really tiny!"

Cancer hope

But immunologist Mahmoud Suhail is hoping to open a new chapter in the history of frankincense.

Scientists have observed that there is some agent within frankincense which stops cancer spreading, and which induces cancerous cells to close themselves down. He is trying to find out what this is.

The Catholic church mostly buys Somalian frankincense

"Cancer starts when the DNA code within the cell's nucleus becomes corrupted," he says. "It seems frankincense has a re-set function. It can tell the cell what the right DNA code should be.

"Frankincense separates the 'brain' of the cancerous cell - the nucleus - from the 'body' - the cytoplasm, and closes down the nucleus to stop it reproducing corrupted DNA codes."

Working with frankincense could revolutionise the treatment of cancer. Currently, with chemotherapy, doctors blast the area around a tumour to kill the cancer, but that also kills healthy cells, and weakens the patient. Treatment with frankincense could eradicate the cancerous cells alone and let the others live.

The task now is to isolate the agent within frankincense which, apparently, works this wonder. Some ingredients of frankincense are allergenic, so you cannot give a patient the whole thing.

FRANKINCENSE FACTS

- Boswellia sacra grows in Oman, Yemen and Somalia
- Other Boswellia species grow in Africa and India
- The tree may have been named after John Boswell, the uncle of Samuel Johnson's biographer
- In ancient Egypt frankincense was thought to be sweat of the gods

Source: The Pharmaceutical Journal

Dr Suhail (who is originally from Iraq) has teamed up with medical scientists from the University of Oklahoma for the task.

In his laboratory in Salalah, he extracts the essential oil from locally produced frankincense. Then, he separates the oil into its constituent agents, such as Boswellic acid.

"There are 17 active agents in frankincense essential oil," says Dr Suhail. "We are using a process of elimination. We have cancer sufferers - for example, a horse in South Africa - and we are giving them tiny doses of each agent until we find the one which works."

"Some scientists think Boswellic acid is the key ingredient. But I think this is wrong. Many other essential oils - like oil from sandalwood - contain Boswellic acid, but they don't have this effect on cancer cells. So we are starting afresh."

The trials will take months to conduct and whatever results come out of them will take longer still to be verified. But this is a blink of the eye in the history of frankincense.

Nine thousand years ago, Omanis gathered it and burnt it for its curative and cleansing properties. It could be a key to the medical science of tomorrow.

Jeremy Howell reports for Middle East Business Report *on BBC World News.*

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