

# Worm parasite that crippled millions is close to eradication

Tom Whipple Science Editor

For as long as there have been humans, there has been guinea worm disease. The parasite is mentioned in the Bible, has long been endemic across the tropics and is probably the inspiration for the symbol of medicine, the snake wrapped around the staff.

Now the worm sent as a “fiery serpent” to afflict the Israelites fleeing Egypt could be experiencing its own end — and if so, it is in large part thanks

to Jimmy Carter. When the former US president left office in 1981 there were more than three million cases of guinea worm globally. Last year, there were 126. For only the second time in history, medicine is set to eradicate a disease in humans. “We can see victory on the horizon,” Mr Carter said.



Jimmy Carter has led the fight to kill off the disease

Ingested in drinking water as microscopic eggs, guinea worm emerges from the skin, usually from the foot, a year later and a metre long. So painful

is it that the most logical thing to do is to put your foot in water to cool it — where it releases its next lot of eggs to strike again. Year after year, whole villages in Africa and Asia would go down with the disease.

Eradicating this scourge has been Mr Carter’s great post-presidency project, and, just past his 90th birthday, the prize might be within reach. When he started, 26,000 villages suffered from it every year; in 2014 there were a handful, and in only four countries: South Sudan, Mali, Chad and Ethiopia.

The inspiration for the project came in Mr Carter’s final year in office, for 1980 was the year when smallpox was defeated. Soon after leaving the White House, he took on a challenge that would match the ambitions of a former president. “No one else wanted to address this disease,” he said. “It was very difficult; there was no vaccine.”

Defeating the disease has been a matter of filtering water and educating people to keep infected feet clear of drinking supplies. For 35 years, Mr Carter has had to cajole corrupt governments to let through medical supplies, as well as sweet-talk recalcitrant witch doctors who made their living treating guinea worm. On one occasion he organised an eight-month ceasefire in Sudan just



Guinea worms usually emerge from the foot after drinking contaminated water

to get medical workers in. “The first time I saw a guinea worm was in a village in Ghana... I saw a beautiful young woman standing by the tree holding a baby in her right arm. I went over as a courtesy to ask her the name of her baby,” Mr Carter said. That was when he saw that it wasn’t a baby; it was her en-

gorged right breast, which had a worm emerging from the nipple. “Later that year, 11 other worms came out of her.”

They dug some wells, and those were the last worms that came out of anyone in the village. Soon, Mr Carter might be able to say the same for the world. It will be an extinction that no one will mourn.

## A glass of red could help you to burn up fat

A compound found in red wine and dark grapes could help people who are overweight to burn fat and manage conditions such as fatty liver disease, scientists claim.

Neil Shay, a biochemist at Oregon State University, was part of a team who exposed human liver and fat cells grown in the lab to extracts of natural chemicals found in muscadine grapes, a dark-red variety native to the southeast US. They found that one chemical, ellagic acid, was particularly potent.

He said: “By boosting the burning of fat, especially in the liver, these plant chemicals may improve liver function in overweight people. If we could develop a dietary strategy for reducing the harmful accumulation of fat in the liver, using common foods like grapes, then that would be good news.”

In an earlier experiment, the team fed some mice on 10 per cent fat food and others on a 60 per cent fat variety. Some were also fed on a grape extract. Professor Shay said: “Our mice like that high-fat diet and they over-consume it, so they’re a good model for the sedentary person who eats too much snack food and doesn’t get enough exercise.”

“The high-fat-fed mice developed fatty liver and diabetic symptoms... But the chubby mice that got the extracts accumulated less fat in their livers and they had lower blood sugar.”

The study is published in the January issue of *The Journal of Nutritional Biochemistry*.

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