

How to still kill a resistant parasite

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Scientists from the Institute of Tropical Medicine Antwerp, in collaboration with colleagues from several developing countries, were able to restore a sleeping sickness parasite's susceptibility to drugs. The parasite causes sleeping sickness in cattle. Because it has become resistant against all currently available drugs, it causes enormous economic losses. Until now, that is.

Not only people suffer from sleeping sickness. *Trypanosoma congolense*, a nephew of the human parasite, infects livestock. Millions of people in sub-Saharan Africa depend on their livestock. Nagana, as [sleeping sickness](#) in livestock is called, is "a primary cause of rural poverty and food insecurity", according to the FAO. The three existing drugs against Nagana are virtually useless. The parasite has developed a way of eliminating the drug from its body. Development of new drugs would cost the pharmaceutical industry more than they would gain.

For years, the Institute of Tropical Medicine collaborates with partner institutes in developing countries all over the world. Together the scientists searched for substances that could block the drug elimination process. No easy task, because the parasite does not grow in the lab. But eventually they found two substances that reinvigorated one of the old medicines, ISM (isometamidium chloride). Both substances (oxytetracycline and enrofloxacin) are antibiotics that are affordable to poor countries. When used alone they are ineffective, but in combination with ISM they are deadly to the parasite.

The scientists first tested their approach in mice, and then in cattle. They

inoculated three groups of six cattle with resistant trypanosomes and then treated them. The cattle that received ISM only, all got Nagana. Half the cattle that received ISM plus an antibiotic were cured. In the other animals, the parasite remained in the blood, but hardly detectable.

Fifty percent cure doesn't seem that much, but with a disease affecting three million [cattle](#) per year, often from owners barely surviving anyway, the difference is substantial.

The patent on oxytetracycline has expired, it is available on the African market and the farmers/herders are familiar with the drug. If the findings are confirmed - always a condition in science - the treatment can be implemented rapidly. Meanwhile the scientists screen close relatives of both [antibiotics](#). They also test lower dosages and more practical ways of administration (during their study they gave intramuscular injections at two to three days interval during one month, which is unpractical in rural Africa).

Provided by Institute of Tropical Medicine Antwerp

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