

Researchers develop low-cost catnip mosquito repellent for rural Uganda

Society for Experimental Biology

Jul 7 2026

 Reviewed

Plant researchers from Wales and Uganda have collaborated on a community enterprise project in rural Uganda, becoming the first to create affordable and highly effective mosquito repellent distilled from locally grown catnip plants. Laboratory and field experiments reveal that the catnip-based repellent skin lotion is just as effective as DEET and offers a much cheaper alternative for preventative action against mosquito-borne diseases in malaria-endemic regions, while also providing new economic opportunities for local Ugandans.

Nepetalactone is a chemical found in the essential oil of catnip, *Nepeta cataria*, and is the chemical responsible for causing feelings of euphoria in cats. Nepetalactone is also a potent natural insect repellent and is very effective at repelling mosquitoes, which are responsible for the transmission of malaria and other vector-borne diseases in Sub-Saharan Africa.

The insect-repelling properties of nepetalactone have been known for a long time, but it has never been commercialised or adopted by pharmaceutical companies since it cannot be patented. This project, presented at the *Society for Experimental Biology* conference in Florence, Italy, demonstrates the validation of nepetalactone as an effective and locally available mosquito repellent.

“*There is a real need to reduce the reliance on malaria medicines because malaria can develop resistance to drugs. Mosquito repellents represent one of the primary measures used to reduce the risk of malaria by reducing mosquito landing and biting events.*”

Dr Simon Scofield, senior lecturer, Cardiff University

Currently, DEET is the most widely used active ingredient in commercial insect repellents and works by disrupting insect sensors to prevent them from landing

on human skin, but DEET products can be very expensive to import into Uganda.

"DEET is out of the price bracket for most rural Ugandan subsistence farmers, so buying commercially available mosquito repellents is just not practicable," says Dr Scofield. "We wanted to make a repellent, which is highly efficacious, but also allows local people to be involved in the production cycle so that it costs a minimal amount of money."

As well as being more affordable, the other benefits of using nepetalactone over DEET are that catnip is widely cultivatable in rural Uganda, the oil is easy to extract, it's safe to use and users report that it smells a lot more pleasant than DEET.

To test the efficacy of the catnip oil as a repellent, Dr Scofield and his colleagues created a insect-repelling hand lotion containing the catnip oil, called DSK lotion, and conducted both laboratory and field trials that compared how mosquitoes were attracted to human skin with different repellent treatments.

The laboratory experiments used a Y-tube olfactometer to test if mosquitoes were more attracted to repellent-treated skin or skin without repellent under controlled conditions. The field trials used a "human landing catch assay" to measure how many wild mosquitoes landed on human skin treated with a different repellent treatments and controls.

"We found that a 6% catnip oil was just as effective as DEET, and the 2% catnip oil was only marginally less effective than that," says Dr Scofield.

As a community enterprise project, this project has employed workers and volunteers from the local area in all aspects of the lotion's production. DSK Lotion, named for local community leader Dison Stephen Kalebo, has been distributed for free in local trials thanks to external grant funding, but the next stage of the project will involve up-scaling production and selling the lotion for a small price to provide a sustainable income to the local workers involved in the project.

"Once we know that we can sell and distribute the repellent at a low-cost, that should generate a self-sustaining system where the money is flowing back to everybody at each stage in the development," says Dr Scofield.

Dr Scofield adds that there may even be scope for expansion of the project's scope across Africa and into the global north, since the repellent also works well on other biting insects such as midges and ticks.

Dr Scofield and his team at Cardiff University are working closely with researchers from Makerere University, Ugandan government officials and malaria clinic workers in the Budaka district of Eastern Uganda to facilitate the trialling and distribution of the repellent. The project is being led by a local organisation called CEMPOP Uganda Limited, which stands for Community Enterprise Model for Plant Oil Production.

Source:

Society for Experimental Biology