

When rural people adopt a more western lifestyle, their risk of allergic reactions rises, writes Tania Ntshong

SA's unique wildlife comes with unique allergens

VISITORS to SA expect to experience the country's unique flora and fauna, perhaps snapping pictures of the big five or stomping through the fynbos on Table Mountain. But they could well have a wildlife encounter of an entirely different kind.

SA's renowned biological diversity not only gives the visitor a chance to see indigenous plants and animals, but also throws up a host of unique allergens.

Mopane worms, abalone, buffalo grass and even the rinkhals spitting cobra all have proteins that can cause havoc in sensitive people, ranging from mild sniffles and wheezing to full-blown anaphylactic shock.

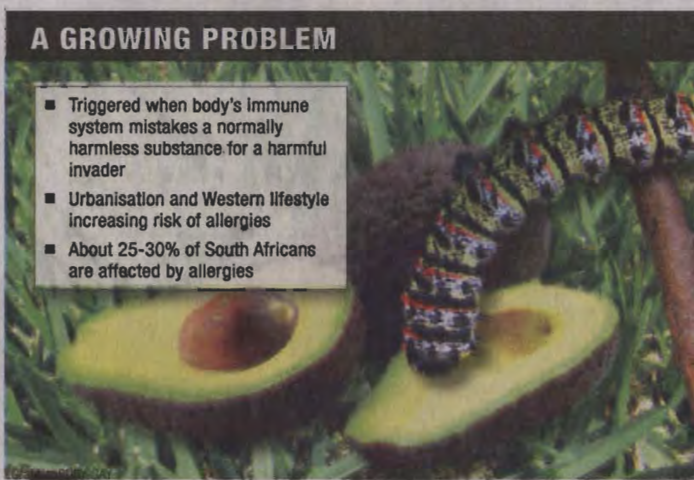
"Africa has its own unique set of allergens because of its particular biodiversity and geography," says Professor Paul Potter, director of the University of Cape Town's Allergy Diagnostic and Clinical Research Unit and head of allergology at Groote Schuur Hospital.

The indigenous allergens add to the onslaught faced by susceptible individuals, of whom

there are many. An estimated 25%-30% of South Africans are affected by allergies, slightly lower than the global figure of 30%-40%. A fifth of South Africans have asthma symptoms, a fifth suffer from allergic rhinitis and 13% have eczema.

An allergic reaction is triggered by the body's immune system when it mistakes a normally harmless substance for a harmful invader. It overreacts to these antigens, which most people tolerate, and produces a flood of immunoglobulin E (IgE) antibodies. These bind to cells called basophils and mast cells, which release chemicals such as histamine and prostaglandin that cause swelling and inflammation in the surrounding tissue and set off a cascade of reactions that result in an allergic reaction.

Identifying the specific proteins, or allergens, that cause sensitive people to react to indigenous species is important as it enables scientists to develop more appropriate diagnostic tests, Prof Potter says. For example, grass allergy tests developed in Europe and the US do not



contain allergens from indigenous species such as kikuyu and boer love grass, and give a false negative for patients who are sensitive to pollen from these plants. His institute has developed several tests for indigenous allergens, including the troublesome grasses. Grass pollen is one of the most common allergens that are inhaled, and affects many South Africans for much of the year.

"We have a long grass pollen

season in SA of six or seven months, and even longer in Gauteng where it lasts for eight months," Prof Potter says.

In line with the global trend, as rural South Africans urbanise and adopt a more western lifestyle their risk of allergy reactions increases. But exactly how and why this happens is still unclear, he says.

A traditional clay hut, thatched with grass, with wood smoke and animals in the

environment would seem at first sight to be the perfect place to generate allergens. But in fact, allergic diseases are rare in rural communities. The problems occur in the towns and cities.

"We just know that a change in diet to one with more processed food and less fresh fruit and vegetables, more time indoors, increased stress and altered sleep patterns have an impact, but we don't know which ones contribute most directly. When people move from rural areas to townships they develop allergies — often to the same things they were exposed to in rural areas without any problems," he says.

One of the more unusual examples is mopane worm allergy. These are actually the larvae of moths, and an important source of protein for subsistence farmers in northern SA, Namibia, Botswana and Zimbabwe. Mopane worms are typically combined with other food in stews or stir fries. Developing a test specific to the allergens in mopane worms, which Prof Potter's institute has done, is

essential for pinpointing cause of a patient's allergy.

The institute has also identified allergens in abalone, increasingly a problematic food in communities that have traditionally harvested the mollusk from SA's coastline. Isolating South African abalone species *Haliotis midas*'s unique protein led to the development of a forensic test that enables authorities to identify illegally exported products. While this is a legal, regulated trade in much of the country's abalone stocks are smuggled to Africa where it is prized for its supposed aphrodisiac properties.

Identifying the specific proteins in problem foods that trigger an allergic reaction in susceptible people is also important because it helps allergy specialists identify other substances that might be problematic.

"Some people appear to have multiple allergies, but in fact they are reacting to the same thing. For instance, latex has allergens common to banana and avocado," Prof Potter says.

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