

National flower found to have compound that slows skin ageing

Shabana Begum

When it comes to Singapore's national flower, beauty is not just skin deep.

Scientists mapping the DNA of the Vanda Miss Joaquim for the first time have discovered a compound that can slow skin ageing.

They also extracted molecules commonly found in fruits and vegetables that have antioxidant properties.

Decoding the genome of flora helps in uncovering natural compounds that can be used to understand, prevent and fight diseases, said the orchid project's co-lead, Professor Teh Bin Tean, director of the SingHealth Duke-NUS Institute of Biodiversity Medicine (BD-Med).

Prof Teh is also a scientist at the Agency for Science, Technology and Research's Genome Institute of Singapore, which was also involved in the project.

Using advanced technologies, researchers from both institutes found that the Vanda Miss Joaquim has 19 chromosomes made up of 2.4 billion DNA base pairs with a total of 32,000 genes.

A human genome has 23 pairs of chromosomes and three billion base pairs.

The orchid's genes influence the formation of proteins which determine its traits, cell processes and natural compounds responsible



Scientists mapping the DNA of the Vanda Miss Joaquim for the first time have discovered vandaterosides, which can slow skin ageing. ST PHOTO: DESMOND WEE

for its pink and purple shades, its scent and substances such as the anti-skin ageing compound.

This substance, called vandaterosides, was previously discovered in an orchid ancestor of the Vanda Miss Joaquim hybrid.

A 2011 study found that exposing vandaterosides to skin cells led to activities that could slow skin ageing.

The Vanda Miss Joaquim was declared Singapore's national flower in 1981. It is widely used as a breeding stalk for more than 400 orchid hybrids.

Prof Teh said the orchid's genome can pave the way for future research in gene engineering.

"We are heartened to be able to construct and decipher the genetic blueprint of our national flower,

and hope that it will be a significant contribution to our natural heritage," he added.

The BD-Med institute was set up in 2021 to study local and regional plant biodiversity for novel medicinal and scientific applications.

Genome mapping is ongoing for 50 other plants from Singapore and the region.

Professor Patrick Tan, the Genome Institute of Singapore's executive director and the project's other co-lead, said plant genomes can be conserved thanks to advanced sequencing technologies.

"We are tremendously honoured to start our journey studying Singapore's plant biodiversity with our national flower."

nshab@sph.com.sg