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MEDICINAL VALUE

INNOVATIVE WAY TO EXTRACT 'BLACK GOLD'

A local company sells modern distillation stoves to produce agarwood oil, writes **SARAH RAHIM**

A GARWOOD, which is popular for its fragrance, is often associated with wealth and prestige. While its oil is regarded as "black gold" due to its high price, its wood chips, which can be burnt to produce fragrant smoke,

can fetch up to RM12,000 per kg, with a slightly lower price for the powdered form.

A non-timber forest product from the *Aquilaria* tree species (or *pokok karas* in Malay), its value comes from a special scented resin formed in the tree when it experiences "stress" due to being wounded or infected by microbes.

This triggers a self-defence mechanism that generates the prized resinous part in the tree.

The tree takes up to six years to mature before it can be inoculated.

In the production of agarwood, a physiological trigger is created by wounding the tree, followed by the use of bio-inducer as the inoculant to produce



Juara Agarwood Resources Sdn Bhd managing director Hafiz Talib (second from left) showing the new distillation system used to extract agarwood oil in Kajang recently. PIX BY MOHD KHAIRUL HELMY MOHD DIN

the resin.

Agarwood farmers and perfume entrepreneurs can get the inoculant from Juara Agarwood Resources Sdn Bhd, which sells modern distillation stoves to produce agarwood oil.

Its managing director, Hafiz Talib, said the bio-inducer, or inoculant, was priced at RM150 per litre, while a small unit of the distiller cost RM10,000.

He said using traditional stoves to extract the oil would require liquefied petroleum gas tanks with each stove costing RM120.

"A bigger distiller can produce up to 250ml of oil at a higher cost," he told the *New Sunday Times*, adding that the distillation unit would reduce the operation cost by half.

He said in the traditional method, four stoves were used to extract the oil, which takes up to four days.

"We need 2.5kg of agarwood to extract 3ml to 5ml of oil. One cycle of extraction can take up to four days. This is why the oil is very expensive," he said, adding that 1ml of agarwood oil cost RM120.

REJUVENATIVE PROPERTIES

Juara Agarwood Sdn Bhd research and development expert Dr Abbas Alias said agarwood was sought-after for its medicinal purposes and rejuvenating scent.

He said the distiller to extract agarwood oil was similar to the modern electric distillation stove used to produce oil.

"When the machine is activated, the vapour will go up to the condenser to produce hydrosol and oil."

He said the new distillation system was environmentally friendly and could address problems such as low efficiency, high operating cost and quality control.

He said it could also reduce the carbon footprint.

Abbas said the invention was in line with the Fourth Industrial Revolution as it allowed monitoring via smartphones.

"It has better precision with sensors for water and electricity. The automation system is the first in the country."

He said the process of producing agarwood by infecting *Aquilaria* trees with bio-inducer was popular as it was safe.

The company, which is a subsidiary of One Diversity Sdn Bhd, produces the bio-inducer by fermenting plants.

"Artificially produced agarwood is known locally as gaharu," said Abbas, who has more than 40 years of experience in forest management from Universiti Putra Malaysia, Serdang.

He said the resinous part of the *Aquilaria malaccensis* species was among the best and most prized non-forest timber products.

"*Aquilaria* trees can be found in areas between the Himalayas and Papua New Guinea."

He said the trees had been illegally logged due to their high value.

MULTIPLE USE

Abbas said the tree, despite being hardy, could not thrive in soil with high moisture content.

"To the trained eye, the species can be differentiated from the seed. After six months of growing the plant in humus, we can transfer it to the soil."

He said after wounding the tree, sufficient bio-inducer must be used to treat it, otherwise it would self-heal and agarwood would not be produced.

"Inoculation is done by injecting the trunk after removing the outer layer of the tree or cutting out slices of the tree."

He said the injection should be carried out in a spiral pattern a foot from the ground.

"The process involves drilling a hole about 45° into the bark of the tree until it reaches the centre, followed by placing a tool to enable 100ml of bio-inducer to be absorbed by the tree. Another method is via pressurised injection of 20ml of bio-inducer into every inoculation hole."

Abbas said both methods could be used simultaneously to ensure that the tree was fully infected.

He said the tree could be infected up to its first branch.

He said the leaves of an infected tree would turn yellow for a short period before turning green again as the tree initiated the self-defence mechanism.

He said the leaves could be used to make tea or heal wounds.

"The bark can be used to make fabrics, just like jute," he said, adding that he planned to offer short courses for those interested on agarwood production.

He said agarwood would be dark in colour, but chemically-induced agarwood like paraquat would have a reddish hue.

"If you burn chemically-induced agarwood, the smell can make you nauseous."

He said today's market required that agarwood-based products be environmentally friendly.

"Those from European countries demand that the production of agarwood be organic and sustainable."

Abbas said the company had a plant in Seremban to manufacture agarwood-based products and planned to help entrepreneurs set up businesses that complied with the Good Manufacturing Practice and the Malaysian Islamic Development Department's regulations.



Juara Agarwood Resources Sdn Bhd research and development expert Dr Abbas Alias showing the method to inoculate the 'Aquilaria' tree in Kajang recently.