

From Delicacy to Arthritis Cure, Mussels Get a Makeover

State-run Central Marine Fisheries Research Institute (CMFRI) develops a mussels-based pill, looks to sell technology to multiple players



EFFORTS to fight arthritis have finally taken us to what are best known for being mouth-watering delicacies: mussels.

A team of scientists at the Kochi-based federal government-run Central Marine Fisheries Research Institute (CMFRI) has developed a nutraceutical product which it says offers health benefits to arthritic patients and those suffering from joint pains. According to the research institute, this product, made by extracting anti-inflammatory ingredients from green mussels, could be a substitute for the regular aspirin-containing anti-inflammatory arthritis drugs with undesirable side effects.

In a country where one out of six people are affected by arthritis, CMFRI has won a patent for the nutraceutical product, Cadalmine GMe. The state-run organisation, currently busy with pre-commercialisation trials, will shortly "sell the technology of making the mus-

sel extract to entrepreneurs", says Dr. G. Syda Rao, director, CMFRI, which falls under the Indian Council of Agricultural Research (ICAR).

The research institute will likely be the knowledge partner in an agreement through which multiple companies will get licences to sell the anti-arthritic product, which is said to be effective enough not only to combat chronic joint pains, arthritis/inflammatory diseases but also to improve cardiovascular functioning.

Though physicians in India don't prescribe, but only suggest nutraceutical products for ailments, in the absence of any specific therapeutic drug for treating a disease as debilitating as arthritis, scientists at the research body expect its product, which will be available at registered medical stores across the country, to be a huge hit thanks to word of mouth and ad campaigns.

A mussels-based product, Seatone, manufactured by New Zealand-based firm Healthries, is al-

PAIN KILLER



The research institute claims the nutraceutical, Cadalmine GMe, not only reduces pain due to arthritic inflammations, but also improves cardiovascular functioning. It is expected to be a much cheaper substitute to an imported product from New Zealand

ready marketed in India by Delhi-based Perma Healthcare for Rs 16 for a 350 mg tablet. An official at Perma Healthcare's Delhi office was tight-lipped about the response from users to Seatone or its domestic sales.

Dr B. Meena Kumari, deputy director general (fisheries), ICAR, when contacted, said the product will, without doubt, serve as an "import substitute" and "will have competitive pricing" when compared with the imported product currently marketed in India.

Another senior official at CMFRI, who asked not to be named, said Cadalmine GMe could ideally be priced at around Rs 9 per 500mg tablet. "As knowledge partner, we want to see that the pricing is normal and not exploitive. We have done the calculation, including the costing, investment, etc. The production cost would be around Rs 4-5 approximately, hence by pricing it at Rs 9 per tablet, there will be a decent margin."

Dr K.K. Vijayan, principal scien-

tist and head, marine biotechnology division, CMFRI, and one of the scientists in the team that developed the mussel extract along with Dr Kajal Chakaravathy and Dr P. Vijayagopal, says a patient has to take "a three-month course, one 500 mg tablet daily, to get good results". Without disclosing further details, he says the initial feedback for pre-commercialisation trials "is really impressive".

"We will subsequently go for international patents depending on the feedback from India," he says, adding that CMFRI's trial have shown that green mussel contains three major components that have been identified as being responsible for minimizing joint pain: the n-3 polyunsaturated fatty acids, glycosaminoglycans and phosphorylated glycolipid and phospholipid components such as lysolecithins.

Vijayan says since the demand for green mussels in the country is yet to pick up, a product such as Cadalmine GMe can help those involved in organised mussel farming sustain themselves or even hit pay dirt, considering the growing number of people in the country who need relief from joint pain—

though orthopedics and other experts say the efficacy of products such as these aren't proven yet. Mumbai-based orthopedic Dr Kapil Mohan says he usually advises Chondroitin for early-stage arthritis and surgery for later stages.

"The efficacy of supplements (like Seatone and Cadalmine GMe) is yet to be verified," he says.

Currently, a big chunk of organised mussel farming in India takes place in northern Kerala. Thanks to government help, it has seen a massive participation of women. Extending from Kozhikode to Kasargode districts, this region is one of Asia's largest "cultured" farms, producing more than 20,000 tonnes of green mussels annually and transforming livelihoods. Similar efforts could be replicated elsewhere in the country's coastal areas where large populations of mussels are found, says Vijayan.

"It is one of the most environment-friendly, cost-effective and sustainable mode of producing valuable protein for human consumption. One just has to put these mussel seeds in a clean sea environment. Your role is just that of a custodian. They just thrive on planktons and sunlight," says Vijayan.

"But what could be a worry is the relatively low consumption of mussels in India," he notes.

Of course, in northern Kerala, *kallummakaya nira-chathu* or *arikadukka* (mussels stuffed with spiced rice) is a very popular delicacy. And as curry, they go with *appam* or *dosa* or *puttu* (steam cake). Elsewhere in India, they are often served grilled or deep-fried. You could also tickle your palate with some mussel pickle from select department stores.

But for a brute majority of Indians, mussels, which reportedly have aphrodisiac properties, are still an occasional savoury dish they have just heard of. Therefore, it makes some business sense that they are used for purposes other than eating.

DR K.K. VIJAYAN
HEAD, MARINE BIOTECH
DIVISION, CMFRI

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Kallummakaya Nira-chathu or *Arikadukka*, a Kerala delicacy

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