Goa-based scholar discovers thrombolytic and wound healing properties of starfish

RAMANDEEP KAUR | NT KURIOCITY

When one thinks of starfish, the first thing that usually comes to mind is how pretty they look. Yet besides this, these sea creatures are also model organisms for regenerations studies owing to their immense regenerative potential. And Mansi Baveja, a PhD scholar at BITS Pilani K K Birla Goa Campus set out to research further on the starfish found in Goa.

Based in Goa, Mansi together with her PhD guide professor Dibakar Chakrabarty and co-guide Angshuman Sarkar wanted to design a study based out of local natural resources available here.

"With hundreds of sea stars being washed ashore especially during the months of September-November, we wanted to explore them for their biomedical potential," says Mansi. However, with starfish being a relatively unexplored species, they faced a lot of challenges in designing the work and standardising protocols.

In fact it took them nearly two years just to figure out that the best time to catch them and was during September-November. They then designed their work plan such that the samples for research were collected during these two months, processed and then stored for use for the rest of the year.

During the course of their research they discovered that the body fluid of these starfish had therapeutic potential and the findings was published through a publication house called Springer Nature. "The coelomic fluid (or body fluid) of Astropecten indicus (the common sea star found along the coast of Goa and Maharashtra) contains proteolytic, thrombolytic and wound healing compounds. Thrombosis is one of the most popular cardio vascular disorders that causes thousands of deaths each year," says Mansi.

Explaining how she stumbled upon these findings, Mansi discloses that she was in fact exploring many bio-activities in this particular sea star species. One of her research objectives was to explore cytotoxic agents present in them which could further be used to target cancer cells. "On the contrary, we observed that cells proliferation was increasing post-exposure to this coelomic fluid.

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Mansi Baveja, a PhD scholar at BITS Pilani K K Birla Goa Campus who has been researching starfish found in Goa has discovered that the body fluid of these sea creatures has therapeutic potential. **NT KURIOCITY** learns more

How will the properties of starfish benefit man?

Deep vein thrombosis leading to pulmonary embolism is one of the leading causes of death worldwide. Together, DVT and PE are referred to as venous thromboembolism (VTE), the third largest cardiovascular killer worldwide after heart attack and stroke. This can be treated with administration of thrombolytic drugs like heparin and warfarin, etc, which are associated with side effects such as uncontrolled bleeding, haemorrhage. Therefore the search for ideal thrombolytic drugs from many sources is on. The coelomic fluid of star fish being non-cytotoxic could be a useful lead in developing novel anticoagulant drugs with lesser side effects.

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We repeated our experiments with different kinds of cells and each time we observed an increase in cell viability upon exposure to the coelomic fluid of this sea star. This led us to change the course of our work and study its wound healing potential instead," she says.

Mansi states that theirs is the first report on the bio-active potential of the starfish Asropecten indicus to be published internationally, adding that there is an extreme death of available literature on the bioactive potential of this species.

Apart from this there is only one national level report on this species which denotes its possible anti-microbial potential and another report on Saponins extracted from these species.

"Most reputed scientific journals aim to publish a novel, characterised and purified bio-compound from natural sources. It is extremely difficult to make an international level publication reporting the bio-active potential of a crude resource." In fact, Mansi and her guide faced a lot of rejection over a year before they could finally substantiate the work with repeated experimentation making it eligible for acceptance for publication.

Originally from Delhi, Mansi further says that researchers normally lose motivation if they are not given a platform to showcase their original findings just because it is not groundbreaking enough. "Every result is important, even negative ones. It would be great if those could be given as much importance as positive results," she says.