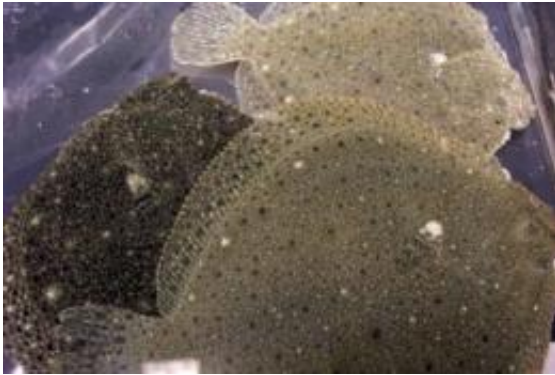


# Potential antifouling substance can cause paler fish

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This is a photo of turbot. Credit: Anna Lennquist University of Gothenburg

The sedative medetomidine has proved effective at inhibiting fouling and is now being trialled by the EU as an ingredient for the antifouling paints of the future. Research at the University of Gothenburg, Sweden, has shown that high concentrations of this substance can have an impact on the marine environment.

Since TBT was banned worldwide in 2008, the search for environmentally friendly antifouling paints has reached fever pitch. One of the substances on trial is medetomidine, a [sedative](#) used in veterinary medicine that has also been shown to prevent barnacle larvae from attaching themselves to vessels.

## Being trialled

Medetomidine is currently being trialled under the EU's Biocidal Products Directive as an active agent in antifouling paint. In her thesis, researcher Anna Lennquist from the Department of Zoology at the University of Gothenburg has examined the effects of low concentrations of medetomidine on fish.

### Makes fish paler

The thesis covers studies where [rainbow trout](#), Atlantic cod, turbot, three-spined stickleback and Atlantic salmon were treated with medetomidine for periods of 1-54 days. The research shows that the most obvious effect is that medetomidine makes fish paler as it affects the [skin cells](#) that contain dark pigment.

## Important for camouflage

"The [pigment cells](#) don't seem to be damaged, even during long-term treatment with medetomidine, but their sensitivity is affected slightly," says Lennquist. "While the paleness itself isn't harmful, functioning pigmentation is very important for a fish's camouflage, communication and UV protection."

## Effects the liver

Another effect noted in several of the studies is that a detoxifying enzyme in the fish's liver is affected.

"In studies of isolated liver fractions, we have been able to establish that the effect of the enzyme is undermined by medetomidine," says Lennquist. "This could mean that a fish's ability to break down [environmental toxins](#) is impaired by the substance."

## **Less active**

Other effects noted after treatment with medetomidine are that the fish are slightly less active and have less of an appetite. Blood sugar content and liver size are also thought to be affected.

## **Must be monitored**

"The intention of the thesis was to identify some of the ways that fish could be affected if we do use medetomidine in antifouling paint. We can state that the leakage of medetomidine should be carefully monitored so that harmful concentrations do not find their way into the marine environment. At the same time, the substance has not proved to have any effect in other important areas, such as growth, oxidative stress, cell toxicity and gene expression."

Provided by University of Gothenburg

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