

## Stress Mediation Advisory Leaflet No. 1

### Use of Bradan Pro-Tex™ in Transport of Farmed and Wild Fish

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#### **Introduction:**

Bradán Pro-Tex™ is now used widely for the transport of farmed and wild fishes by fish farmers, fishery managers and aquarists. Usually it is used in the form of Pro-Tex™ Hydro, a water soluble suspension for addition to the water column, from which the fish imbibe it. Where necessary eg for fish in open waters or cages, it can be used as the oil based feed additive.

Once the Heat Shock Protein Accelerator in the Pro-Tex™ solution has activated, the fish will produce very high levels of protective heat shock proteins as soon as the transport stresses occur. Normally lower levels would be produced naturally and it would take many hours for them to reach a peak. The effectiveness of the product lasts for three to four days in the fish depending on temperature, so if the journey is a prolonged one, a second exposure three days into the journey would be in order.

#### **Application:**

Bradán Pro-Tex™ should be added to the fish's tank water at least one hour before transport. Ideally the tank water level would be lowered a little, water flow stopped and oxygenation provided. If this is not feasible then it can be added directly to the transportation tanks but that does not provide cover for the very stressful initial transfer stage, whether nets are used or the fish are pumped from their tanks.

Because the Pro-Tex™ Hydro is very concentrated, relatively small volumes are used, but these must be dispersed through out the tank to ensure all fish get exposure.

Pro-Tex™ Hydro is added to the water at a level of 4ml per cubic metre of water so there are considerable economies from lowering the tank level before use.

Over-dosage will not cause any harm but under-dosing leads to no benefit at all.

It is important to expose the fish for at least one hour, or longer if possible, to ensure all of them imbibe some before transporting them.

Results are often remarkable, as can be seen from the attached endorsements by customers. There are however limits to the effectiveness of the product and it should not be used as a substitute for best welfare practice in relation to stock densities and oxygenation.

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## Letters from Satisfied Customers

### *Customer 1.*

#### **E-mail...**

**To: Michael at Bradan Ltd.**

Good news – the first two deliveries to Outer Skerries (32 hrs on truck) were some of the best I have done for a very long time. Mortalities after 24 hrs was 50 fish (ALL parr - so vulnerable anyway) out of 33000. Of course, it's not scientifically proven that Pro-TeX™ prickly pear did the job, but I certainly won't be risking any controls to prove it!

Another load next week so hopefully that will be the same.

Although my cell biology is but a distant memory, I would really like to try to understand what's going on at the cellular level. I've googled chaperones and heat shock proteins and it looks interesting but can you direct me to something more specific to fish please. You have a convert here anyway!

Regards  
Dave Tierney  
Yorkshire Salmon Ltd

### *Customer 2.*

In October 2007 one of our customers transferred 310,000 salmon smolts to Murmansk in Russia .

The quality of the fish was good and the transportation very careful. Pro-TeX™ Hydro was also applied before transport.

This is our E-mail query as to the progress of the delivery followed by the excellent, if somewhat laconic, reply.

**Question...** "Very curious to hear about the Murmansk fish and how they performed. It will be the furthest we have ever sent Pro-TeX™ exposed fish. Also we need to have diet with Pro-TeX™ in it for them on arrival next time as I am sure it will make a tremendous difference given the water temperatures there."

**Answer...** "Russian fish discharged yesterday- estimated 200 mortalities (ex 310,000 fish and seven days in boat).

The downside is that sea temperature is 6-7 degrees, so feed response is a little muted."