Florfenicol Testing at Analytical Services Tasmania

Analytical Services Tasmania (AST) has fast-tracked the development of methods for analysing the antibiotic florfenicol in fish, water, sediments and other solids.

This was in response to the recent application by the Tasmanian Salmon industry to use florfenicol to help combat *Piscirickettsia salmoni*s.

Florfenicol is metabolised by fish to several intermediate-metabolites, and binds strongly to tissue proteins. This can hinder direct extraction and lead to underestimation of residue levels. To overcome tissue binding, hot acid digestion is used during sample preparation. This releases bound florfenicol, and converts florfenicol and all its metabolites to florfenicol-amine, a more stable and detectable form. This technique improves extraction efficiency, ensuring accurate quantification.

The current Maximum Residue Limit (MRL) proposed by the APVMA is 1 mg/kg, reported as the “Sum of florfenicol and its metabolites measured as florfenicol-amine”. This is aligned with the requirements in other countries such as China, Japan, the EU and the US.

Analytical Services Tasmania

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Sediments and other non-tissue samples are analysed using the QuEChERS (Quick, Easy, Cheap, Effective, Rugged, and Safe) technique. This is a popular method for extracting many antibiotics and other residues from environmental matrices. The advantages of this technique include minimal solvent use, a technique which is fast and scalable, and is also effective in complex matrices.

Florfenicol is rapidly degraded in the environment, and it is recommended that all samples are frozen as soon as possible after collection. If samples cannot be delivered to the laboratory within 12 hours of collection they should be frozen on site. Please contact the laboratory for appropriate containers.

Analysis is undertaken using highly sensitive and specific liquid chromatography-tandem mass spectrometry (LC-MS/MS). Quantification of results is aided by addition of isotopically-labelled analogues of florfenicol and florfenicol-amine, ensuring accurate results in all sample types with very low limits of reporting (see below).

Limits of Reporting (LOR)	Water (µg/L)	Sediment / Solid (mg/kg)	Fish / Tissue (mg/kg)
Florfenicol	0.1	0.005	-
Florfenicol-amine	0.1	0.01	-
Sum of florfenicol and its metabolites measured as florfenicol-amine	-	-	0.01

	Water	Sediment / Solid	Fish / Tissue
Recommended sample quantity and container	200mL Amber glass with air gap for freeze expansion	Plastic or glass wide mouth jar, at least 20g sample	Plastic zip-lock bag, at least 10g sample.

Please contact us if you would like more information regarding antibiotic testing:
Tim Jordan, Section Head – Organic Chemistry phone 03 6165 3314
email tim.jordan@ast.tas.gov.au