# Algal bloom wildlife post-mortem report

Government of South Australia
Department for Environment and Water

**Species – Little penguin**

**Date collected – 1 July 2025**

**Location – Victor Harbor and Goolwa Beach**

History relating to the animal

Two adult little penguins (*Eudyptula minor*) were found dead on beaches of the Fleurieu Peninsula. One washed up on the beach at Goolwa (Penguin 1), and the second on the beach at Victor Harbor on 1 July 2025.

Clinical examination

Both animals were already dead and so could not be examined prior to death. Both animals were noted to have puncture wounds on their body.

Necropsy

The necropsies (looking at the whole body) revealed that both little penguins were in good condition with adequate muscle coverage. There was moderate post-mortem autolytic change (decomposing after death).

Both penguins had a puncture wound to the lower belly area, with internal organs visible through the hole. There was no inflammation surrounding the wounds, indicating they likely occurred after death.

Penguin 1 had a well demarcated (well defined edges), round, hard, yellow nodule (lump) next to the heart (approximately 4 x 3 x 3cm). When cut in half, the centre of the nodule was made out of a hard, irregular, gritty, and yellow material which was easily removed from the outer layer of thickened fibrous connective tissue.

Penguin 2 had single, round, white and well-demarcated (defined edges) lesion within the liver.

Both penguins had empty gizzards (the muscular part of a bird's stomach) and brown, pasty intestinal contents.

For both birds, samples were collected to test for avian influenza and Newcastle disease. Tissues were collected for histopathology (looking at tissues under the microscope for more detailed information), with additional samples collected to test for brevetoxins and other algal biotoxins (a possibility due to the algal bloom).

Histopathology

For both birds, samples from every major body system were examined under the microscope.

In Penguin 1, examination of the heart nodule showed inflammatory cells, tissue necrosis (decomposition) and organisms that resembled fungal hyphae, surrounded by a layer of

granulation tissue (body trying to contain an area of infection). Inflammation was found in the liver, spleen, kidney and proventriculus (glandular stomach in birds). There was mild-moderate autolysis (decomposition) of the spleen, kidney and proventriculus, with a focal, ulcerative lesion (localised ulcer) within the proventriculus. Large roundworms (parasites) were found in one section of the gut.

In Penguin 2, there were multiple areas of inflammation in the liver, especially around blood vessels. One area showed chronic (long-term) inflammation with bile duct changes, and organisms (likely bacteria) were seen surrounded by immune cells, indicating infection. There was mild-moderate autolysis (decomposition) and inflammation in the liver, spleen, kidney and small intestines. There were structures within the kidneys that appeared to be parasitic worm eggs.

Virology

Testing results for avian influenza and Newcastle disease were negative for both birds.

Brevetoxins

No samples were above the limits of reporting.

Other algal biotoxins

No samples were above the limits of reporting.

Summary

PENGUIN 1

Two adult little penguins were found dead on beaches of the Fleurieu Peninsula. Both birds were in good body condition. Laboratory examination could not identify the cause of death of either penguin, however multiple processes likely contributed to their illness and possibly death.

Penguin 1 had signs consistent with a chronic (long-term) infection in the air sacs caused by fungi, with secondary (subsequent) bacterial infection. The fungal infection is a common lesion in birds, especially those that are immunosuppressed. This bird also had signs of inflammation in many organs and some gut parasites.

Penguin 2 had a chronic (long-term) infection in the liver, which could have been caused by fungi or bacteria. The bird also had parasites in the kidneys.

Testing for avian influenza and Newcastle disease was negative in both birds. Brevetoxins and other algal biotoxins were also not detected.

Outlook

**PATH RESULTS: LITTLE PENGUIN, (Wi)** [redacted]

**From** [redacted]
**Date** Wed 13/08/2025 5:00 PM
**To** [redacted]

[redacted]

[redacted]

**Tested on** 01/07/25
**Reported on** 13/08/25 17:30
**Referred on** 01/07/25 **by:** [redacted]

**Owner:**
LITTLE PENGUIN

VICTOR HARBOR 5211

**Animal/s:**
Wild Birds

**DOB:** N/A

**Collected:** 01/07/25 09:00 **Subm.No:** [redacted] **Lab No.:** [redacted]

**Samples tested as received** All Tests Complete

HISTOPATHOLOGY FROM NECROPSY

REF: [redacted]
CLINICAL HISTORY
Please see submission form.

MACROSCOPY
Penguin 1 = pot 1
Penguin 2 = pot 2

1A = granuloma
2A = liver with nodule

B = lung, liver, spleen
C = skeletal muscle
D = GIT sections
E = brain
F = eye and trachea

MICROSCOPY
Penguin 1
Nodule next to heart, suspect air sac: This section consist of moderate numbers of inflammatory cells (mostly degenerate heterophils) embedded within an extensive matrix of (coagulative) necrosis. There are multiple suspicious negative-staining organisms that resemble fungal hyphae seen within the mass.
The necrosis is surrounded by a layer of granulation tissue and occasional adipose tissue. Low numbers of heterophils and macrophages are seen within the surrounding granulation tissue.

Liver: Multifocally there are moderate numbers of small lymphocytes and plasma cells around the periportal regions.

Lung: The blood capillaries are mildly congested. There are occasional small lymphocytes and plasma cells in the air capillary septa.

Spleen: There is moderate autolysis. The follicles are mildly expanded by small lymphocytes (lymphoid hyperplasia), and a moderate increase in plasma cells. Mild increase numbers of heterophils are seen within the red pulp.

Skeletal muscle: There is a focal area of low numbers of heterophils

[redacted]

[redacted]

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within the interstitum.

Kidney: There is moderate autolysis. The glomeruli appears to be mildly expanded by smudgy eosinophilic material (query amyloid vs autolysis). Within the interstitium are multifocal moderate accumulations of plasma cells, small lymphocytes and heterophils.

Proventriculus: There is mild-moderate autolysis.
There is a focal ulcerative lesion, accompanied by underlying granulation tissue with low numbers of heterophils, small lymphocytes and plasma cells.

GIT - in one section there is a large, and several smaller roundworms within he lumen.

Brain, eye, trachea, heart: No significant findings.

Penguin 2
Liver: Multifocally around the periportal regions are moderate numbers of plasma cells and small lymphocytes (periportal, lymphoplasmacytic). In one focal area, surrounding a vessel, is a poorly demarcated area of inflammation with moderate biliary hyperplasia and fibrosis. It is characterized by large numbers of plasma cells, small lymphocytes with lesser numbers of macrophages and heterophils. Multinucleated giant cells are occasionally seen (granulomatous inflammation).
Within the vessel, there are multiple organisms that are of two different populations: The first population is approximately 10um, rod-like and basophilic organisms. These occasionally have a oval and pin-shaped head (reminiscent of sperm?). The second organism is smaller, round to oval, signet ring-like structures that are approximately 2.5um long. The organisms are surrounded by moderate numbers of plasma cells

and small lymphocytes.

Kidney: There is moderate autolysis. Multifocally within the area of the renal pelvis are a sheet of round structures (remininscent of parasite eggs). The structures are approximately 50-80 microns diameter, round with a thinned eosinophilic wall, which contains one single (degenerate) organism surrounded by a clear central core.
Low to moderate numbers of small lymphocytes and plasma cells are seen within the interstitial space.

Spleen: There is mild-moderate autolysis. Multifocally within the red

[redacted]

[redacted]

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**Animal/s:**
Wild Birds

**DOB:** N/A

**Collected:** 01/07/25 09:00 **Subm.No:** [redacted] **Lab No.:** [redacted]

**Samples tested as received** All Tests Complete

pulp are increased numbers of macrophages and heterophils. The follicles are mildly expanded due to mild increase numbers of small lymphocytes (likely lymphoid hyperplasia).

Skeletal muscle: There is a focal area of perivascular to interstitial accumulation of moderate numbers of plasma cells, small lymphocytes and heterophils.

Intestine: Majority of sections are moderately autolysed.
In one small intestinal section, there is diffuse infiltration of the lamina propria by large numbers of small lymphocytes and plasma cells, with lesser numbers of macrophages. The underlying lymphoid follicles are hyperplastic.

Brain, eye, trachea, heart, lung: No significant findings.

DIAGNOSIS

Penguin 1:
Nodule next to heart, suspect air sac: locally extensive, large, pyogranulomatous to granulomatous air saccultis with suspected intralesional fungal hyphae

Liver: Multifocal, moderate, subacute, periportal lymphoplasmacytic hepatitis

Spleen: Mild heterophilic splenitis with moderate lymphoid hyperplasia

Kidney: Moderate, multifocal, chronic lymphoplasmacytic interstitial nephritis

Kidney: Multifocal, chronic, mild to moderate, protein accumulation within glomerulus (suspect amyloid)

Proventriculus: Focal, ulcerative, mild, chronic proventriculitis with granulation tissue formation.

Penguin 2:
Liver: Locally extensive, chronic, marked pyogranulomatous to granulomatous hepatitis with intralesional organisms

[redacted]

[redacted]

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**Owner:**
LITTLE PENGUIN

VICTOR HARBOR 5211

**Animal/s:**
Wild Birds

**DOB:** N/A

**Collected:** 01/07/25 09:00 **Subm.No:** [redacted] **Lab No.:** [redacted]

**Samples tested as received** All Tests Complete

Liver: Multifocal, moderate, subacute, periportal lymphoplasmacytic hepatitis

Kidney: Multifocal, mild to moderate, acute to subacute granulomkatous interstitial nephritis with suspect intralesional parasite eggs

Spleen: Multifocal, mild, acute to subacute, histiocytic and heterophilic splenitis with mild lymphoid hyperplasia.

Small intestine: marked, multifocal, subacute lymphoplasmacytic and histiocytic enteritis with secondary GALT-associated hyperplasia

COMMENTS
Penguin 1: the primary lesion here is the (likely fungal) air saccultis - often caused by Aspergillus sp. This is a common lesion in birds, especially those immunosuppressed. There is also evidence here of a likely bacteria (?secondary to air sac infection) and systemic inflammatory response, and some GIT paracitism.

Penguin 2: The liver contains a locally extensive area of granulomatous to pyogranulomatous inflammation here. There is also significant paracitism

[redacted]
Specialist Pathologist

Validated by [redacted] Veterinary Pathologist.

[redacted]

[redacted]

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**Animal/s:**
Wild Birds

**DOB:** N/A

**Collected:** 01/07/25 09:00 **Subm.No:** [redacted] **Lab No.:** [redacted]

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SUMMARY DIAGNOSIS
Penguin 1
Probable mycotic air sacculitis

Penguin 2
Pyogranulomatous hepatitis
Probable renal Renicola sp. ova (trematode)

SUMMARY COMMENTS
Multiple processes contributed to morbidity for the two birds including probable mycotic air sacculitis, pyogranulomatous hepatitis (which could be bacterial or fungal in origin) and Renal trematodiasis.

[redacted]
Specialist Veterinary Anatomic Pathologist
[redacted]

Validated by [redacted]

**MOLECULAR DIAGNOSTICS**

**NEWCASTLE DISEASE VIRUS RNA PCR (REAL TIME REVERSE TRANSCRIPTASE)**

Specimen type: Swabs in VTM Number of specimens: 1

| SPECIMEN ID | F Gene | M Gene | L Gene |
|---|---|---|---|
| POOL | Not detected | Not detected | Not detected |

Validated by [redacted] Laboratory Scientist.

[redacted]

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[redacted]

[redacted]

**Owner:**
LITTLE PENGUIN

VICTOR HARBOR 5211

**Animal/s:**
Wild Birds

**DOB:** N/A

**Collected:** 01/07/25 09:00 **Subm.No:** [redacted] **Lab No.:** [redacted]

**Samples tested as received** All Tests Complete

[redacted]

CLINICAL HISTORY
Two little penguins submitted. One was washed up on sunday in front of Treleaven PL, Goolwa; and the other one this morning in front of the Victor Harbour Hotel, Victor Harbour. They both had punctured wounds but unable to determine it happened after death. To be submitted via [redacted] tonight.
SAMPLES SUBMITTED
Two Little Penguins submitted.
Bird 1 (1kg) = In front of Treleven Pl, Goolwa
Bird 2 (800g) = In front of hotel victor, Victor Harbour
NECROPSY FINDINGS
Bird 1 = In front of Treleven Pl, Goolwa
The carcass is moderately autolysed. The bird weighs 1kg.
The bird is in good condition with adequate coverage over the keel bone.
There is a 2cm diameter round, full thickness, puncture wound on the RIGHT lateral ventral coelomic region. There is no inflammation on the adjacent skin (likely post-mortem predation). The caudal coelomic organs can be visualised through this lesion.
Within the cranial coelomic cavity and located next to the heart is a well demarcated, round, hard, yellow nodule. It is approximately 4 x 3 x 3cm, and it does not arise/associated with other organs within the cranial coelomic cavity. On cut section, the centre of the nodule is made out a hard, irregular, gritty, and yellow material which is easily removed from an outer layer of thickened fibrous connective tissue (suspect granuloma).
There is moderate amounts of sand contamination, which corresponds to the previously described lesion was at the RIGHT lateral ventral coelomic cavity. The air sacs are clear. The gizzard is empty. The intestinal contents are brown and pasty.
Bird 2 = In front of hotel victor, Victor Harbour
The carcass is moderately-markedly autolysed. The bird weighs 800g.
The bird is in good condition with adequate coverage over the keel bone.
There is a 8cm oval and full thickness puncture wound at the LEFT lateral ventral coelomic cavity. There is no inflammation on the adjacent skin (likely post-mortem predation). The underlying ribs and

organs can be visualised through this lesion. The LEFT lateral coelomic organs are covered with moderate amounts of sand.
Within the liver is a single, round, white and well-demarcated lesion (suspect hepatitis).
The gizzard is empty. The caudal 1/2 intestines are stained green on the serosal surface (autolysis). The intestinal contents are opaque, pasty

[redacted]

[redacted]

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[redacted]

**Owner:**
LITTLE PENGUIN

VICTOR HARBOR 5211

**Animal/s:**
Wild Birds

**DOB:** N/A

**Collected:** 01/07/25 09:00 **Subm.No:** [redacted] **Lab No.:** [redacted]

**Samples tested as received** All Tests Complete

and brown to green.
GROSS DIAGNOSIS
Bird 1 (In front of Treleven Pl, Goolwa):
Cranial coelomic nodule: suspect granuloma
Likely post-mortem predation
Bird 2 (In front of hotel victor, Victor Harbour):
Liver: suspect hepatitis (bacterial vs fungal)
Likely post-mortem predation
SAMPLES COLLECTED & TESTING
Both Penguins: tracheal and cloacal swabs in VTM -AI/ND PCR
Both penguins: Fresh tissues in 50 mL pots (liver, intestines, kidney, lung) - stored at -80
Both penguins: Fresh tissue in 5 mL tubes (liver, spleen, heart, kidney, brain, lung) - stored at -80
Fresh sample of coelomic nodule (penguin 1) - stored at -80
Swab of coelomic nodule (penguin 1) - stored at 4
Fresh sample of liver lesion (penguin 1) - stored at -80
Swab of liver lesion (penguin 1) - stored at 4
Fixed tissues - Stored at room temperature- histopathology to follow

Comments: the mass found in the cavity of Bird 1 may be within the airsac, and be possibly a fungal granuloma- histopathology is to follow. Similarly histopathology will be done on bird 2 to better define the gross lesions- please await

[redacted]
Specialist Pathologist
[redacted]
Resident

Validated by [redacted] Veterinary Pathologist.

**CASE MANAGEMENT DETAILS**

Case Managed by:
Case Management Requested by: [redacted]
Case Management Requested on: 02/07/25

Case Details: Found dead.

[redacted]

[redacted]

**Tested on** 01/07/25
**Reported on** 13/08/25 17:30
**Referred on** 01/07/25 **by:** [redacted]

**Owner:**
LITTLE PENGUIN

VICTOR HARBOR 5211

**Animal/s:**
Wild Birds

**DOB:** N/A

**Collected:** 01/07/25 09:00 **Subm.No:** [redacted] **Lab No.:** [redacted]

**Samples tested as received** All Tests Complete

**MOLECULAR DIAGNOSTICS**

**INFLUENZA A RNA PCR (REAL TIME REVERSE TRANSCRIPTASE)**

Specimen type: Swabs in VTM

| SPECIMEN ID | Type A | H5 | H7 |
|---|---|---|---|
| POOL | Not detected | | |

Validated by [redacted] Laboratory Scientist.

| | |
|---|---|
| Number of samples | 13 |

Tasmanian Government

**ANALYTICAL SERVICES TASMANIA**

18 St Johns Avenue New Town 7008 TAS
03 6165 3300
enquiries@ast.tas.gov.au
www.analyticalservices.tas.gov.au

Submission Number: [redacted]
Report Number:
Issue Date: 6/02/2026
Status: Final

# CERTIFICATE OF ANALYSIS

Customer: [redacted]
Address:
Contact:

Submission Description: Biotoxin and Brevotoxins
Sample Received Date: 11/12/2025
Contract Number:
Client Order Number: [redacted]
Program/Quote Reference: Biotoxin and Brevotoxins

*Sample(s) analysed as received. Sampling date and time data supplied by the client. The document shall not be reproduced except in full.*
*Additional information relating to this submission can be found in the sample receipt notification.*
*This report supersedes any previous reports with this submission number.*
*Many tests specify a holding time which gives the recommended timeframe by which a sample should be preserved/extracted and/or analysed after the sample is taken.*
*Holding time information can be found on the AST website https://analyticalservices.tas.gov.au/our-services/containers-samples-and-submissions .*
*Whilst every effort is made to analyse samples within these timeframes, situations can occur where this is not possible.*
*Where a test has been conducted outside the recommended sample holding time this should be taken into account when interpreting results.*

## The results in this report were authorised by:

| *Name* | *Position* | *Name* | *Position* |
|---|---|---|---|
| [redacted] | **Chemist** | [redacted] | **Section Head - Organic Chemistry** |

## Test Information:

| *Method ID* | *Test Description* | *Date Commenced:* |
|---|---|---|
| 3411 | Lipophilic Toxins in Shellfish by LC-MS/MS | 02-02-2026 |
| 3411A | Brevetoxins in Shellfish by LC-MS/MS | 02-02-2026 |
| 3416 | PST in Biota by LC-MS/MS (Boundy Method) | 02-02-2026 |

*Sample Comments*

**Sample Number: 391441**

**3411A Brevetoxins in Shellfish by LC-MS/MS**
The LOR has been increased due to limited sample available for testing

**Sample Number: 391442**

**3411A Brevetoxins in Shellfish by LC-MS/MS**
The LOR has been increased due to limited sample available for testing

**Sample Number: 391443**

**3411A Brevetoxins in Shellfish by LC-MS/MS**
The LOR has been increased due to limited sample available for testing

*IS*- Insufficient Sample

* NATA accreditation does not cover this result

## Chemistry Test Results (Biota - Food)

| | | Sample Description | Liver | Kidney | Lung | Spleen | Heart | Brain |
|---|---|---|---|---|---|---|---|---|
| | | Sampled Date/ Time | 09/07/25 0:00 | 09/07/25 0:00 | 09/07/25 0:00 | 09/07/25 0:00 | 09/07/25 0:00 | 09/07/25 0:00 |
| Method ID | Analyte | Units | 391438 | 391439 | 391440 | 391441 | 391442 | 391443 |
| 3411 | AZA1 | mg/kg WMB | <0.01* | <0.01* | *IS* | *IS* | *IS* | *IS* |
| | AZA2 | mg/kg WMB | <0.01* | <0.01* | *IS* | *IS* | *IS* | *IS* |
| | AZA3 | mg/kg WMB | <0.01* | <0.01* | *IS* | *IS* | *IS* | *IS* |
| | Domoic Acid | mg/kg WMB | <0.05* | <0.05* | *IS* | *IS* | *IS* | *IS* |
| | DTX1 Free | mg/kg WMB | <0.01* | <0.01* | *IS* | *IS* | *IS* | *IS* |
| | DTX1 Total | mg/kg WMB | <0.01* | <0.01* | *IS* | *IS* | *IS* | *IS* |
| | DTX2 Free | mg/kg WMB | <0.01* | <0.01* | *IS* | *IS* | *IS* | *IS* |
| | DTX2 Total | mg/kg WMB | <0.01* | <0.01* | *IS* | *IS* | *IS* | *IS* |
| | GYM | mg/kg WMB | <0.01* | <0.01* | *IS* | *IS* | *IS* | *IS* |
| | Homo-YTX | mg/kg WMB | <0.02* | <0.02* | *IS* | *IS* | *IS* | *IS* |
| | OA Free | mg/kg WMB | <0.01* | <0.01* | *IS* | *IS* | *IS* | *IS* |
| | OA Total | mg/kg WMB | <0.01* | <0.01* | *IS* | *IS* | *IS* | *IS* |
| | PnTx-G | mg/kg WMB | <0.01* | <0.01* | *IS* | *IS* | *IS* | *IS* |
| | PTX2 | mg/kg WMB | <0.01* | <0.01* | *IS* | *IS* | *IS* | *IS* |
| | SPX1 | mg/kg WMB | <0.01* | <0.01* | *IS* | *IS* | *IS* | *IS* |
| | Total DST | OA eq. mg/kg | <0.01* | <0.01* | *IS* | *IS* | *IS* | *IS* |
| | YTX | mg/kg WMB | <0.01* | <0.01* | *IS* | *IS* | *IS* | *IS* |
| 3411A | Brevetoxin 1 | mg/kg WMB | <0.10* | <0.10* | <0.10* | <0.20* | <0.50* | <0.50* |
| | Brevetoxin 2 | mg/kg WMB | <0.02* | <0.02* | <0.02* | <0.04* | <0.10* | <0.10* |
| | Brevetoxin 3 | mg/kg WMB | <0.02* | <0.02* | <0.02* | <0.04* | <0.10* | <0.10* |
| 3416 | C1 | STX.2HCl eq. mg/kg | <0.01* | <0.01* | <0.01* | *IS* | *IS* | *IS* |
| | C2 | STX.2HCl eq. mg/kg | <0.02* | <0.02* | <0.02* | *IS* | *IS* | *IS* |
| | C3 | STX.2HCl eq. mg/kg | <0.02* | <0.02* | <0.02* | *IS* | *IS* | *IS* |
| | C4 | STX.2HCl eq. mg/kg | <0.02* | <0.02* | <0.02* | *IS* | *IS* | *IS* |
| | dcGTX1 | STX.2HCl eq. mg/kg | <0.02* | <0.02* | <0.02* | *IS* | *IS* | *IS* |
| | dcGTX2 | STX.2HCl eq. mg/kg | <0.02* | <0.02* | <0.02* | *IS* | *IS* | *IS* |
| | dcGTX3 | STX.2HCl eq. mg/kg | <0.02* | <0.02* | <0.02* | *IS* | *IS* | *IS* |
| | dcGTX4 | STX.2HCl eq. mg/kg | <0.02* | <0.02* | <0.02* | *IS* | *IS* | *IS* |

*IS*- Insufficient Sample

* NATA accreditation does not cover this result

## Chemistry Test Results (Biota - Food)

| | | Sample Description | Liver | Kidney | Lung | Spleen | Heart | Brain |
|---|---|---|---|---|---|---|---|---|
| | | Sampled Date/ Time | 09/07/25 0:00 | 09/07/25 0:00 | 09/07/25 0:00 | 09/07/25 0:00 | 09/07/25 0:00 | 09/07/25 0:00 |
| Method ID | Analyte | Units | 391438 | 391439 | 391440 | 391441 | 391442 | 391443 |
| 3416 | dcNEO | STX.2HCl eq. mg/kg | <0.02* | <0.02* | <0.02* | *IS* | *IS* | *IS* |
| | dcSTX | STX.2HCl eq. mg/kg | <0.01* | <0.01* | <0.01* | *IS* | *IS* | *IS* |
| | doSTX | STX.2HCl eq. mg/kg | <0.01* | <0.01* | <0.01* | *IS* | *IS* | *IS* |
| | GTX1 | STX.2HCl eq. mg/kg | <0.01* | <0.01* | <0.01* | *IS* | *IS* | *IS* |
| | GTX2 | STX.2HCl eq. mg/kg | <0.01* | <0.01* | <0.01* | *IS* | *IS* | *IS* |
| | GTX3 | STX.2HCl eq. mg/kg | <0.01* | <0.01* | <0.01* | *IS* | *IS* | *IS* |
| | GTX4 | STX.2HCl eq. mg/kg | <0.01* | <0.01* | <0.01* | *IS* | *IS* | *IS* |
| | GTX5 | STX.2HCl eq. mg/kg | <0.02* | <0.02* | <0.02* | *IS* | *IS* | *IS* |
| | GTX6 | STX.2HCl eq. mg/kg | <0.02* | <0.02* | <0.02* | *IS* | *IS* | *IS* |
| | NEO | STX.2HCl eq. mg/kg | <0.02* | <0.02* | <0.02* | *IS* | *IS* | *IS* |
| | STX | STX.2HCl eq. mg/kg | <0.01* | <0.01* | <0.01* | *IS* | *IS* | *IS* |
| | Total PST | STX.2HCl eq. mg/kg | <0.10* | <0.10* | <0.10* | *IS* | *IS* | *IS* |

*IS*- Insufficient Sample

* NATA accreditation does not cover this result