



## **List of Saxitoxin Group Reference Materials Commercially Available**

European Union Reference Laboratory for Marine Biotoxins (EURLMB)  
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## 1. SAXITOXIN GROUP

<b>Centre for environment, fisheries and aquaculture science (CEFAS)</b>				
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Name	Sales Name	Concentration	Amount	Comments
Pacific oyster PSP toxin matrix CRM	PO PST CRM 1101	(668 ± 57) µg STX di-HCl equivalents/kg	5.7 g	Certified concentrations (95% confidence) [STX] = (0.22 ± 0.02) µmol/kg [GTX4] = (0.33 ± 0.05) µmol/kg [GTX3] = (0.23 ± 0.02) µmol/kg [GTX2] = (0.20 ± 0.02) µmol/kg [GTX1] = (0.41 ± 0.05) µmol/kg [NEO] = (0.64 ± 0.09) µmol/kg [C1] = (0.66 ± 0.15) µmol/kg [C2] = (0.74 ± 0.09) µmol/kg Other toxins present (non-certified): [GTX5] = traces; [dcGTX2] = 0.08 µmol/kg; [dcGTX3] = 0.01 µmol/kg

<b>European Commission – Directorate General Joint Research Centre</b>				
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Website: <a href="https://crm.jrc.ec.europa.eu/">https://crm.jrc.ec.europa.eu/</a>				
Name	Sales Name	Concentration	Amount	Comments
Saxitoxin in acetic acid	BCR-663	(9.8 ± 1.2) mg/kg	1 ml	Sales unit: vial
Mussel Tissue	BCR-543	Saxitoxin-2HCl < 0.07 mg/kg Saxitoxin-2HCl (if enriched with BCR-663) (0.48 ± 0.06) mg/kg dc-saxitoxin < 0.04 mg/kg	15 g	It is available in heat-sealed laminate sachets containing about 15 g of material each

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<b>Laboratorio CIFGA S.A.</b> Av. Benigno Rivera 56, 27003, Lugo, Spain - Tel.: (+34) 982 816 715 Email: <a href="mailto:info@cifga.com/">info@cifga.com/</a> Website: <a href="http://www.cifga.es/">http://www.cifga.es/</a>				
Name	Sales Name	Concentration	Amount	Comments
Saxitoxin	CRM-00-STX <b>Lot: 23-002</b>	[STX] = (20.9 ± 1.6) µg/g Purity ≥ 99 %	10 µg	Amber glass vial (approx. 0.5 ml) Liquid. Aqueous [HCl] = 3 mM, pH = 2.60
Gonyautoxins 2&3	CRM-00-GTX2&3 <b>Lot: 22-001</b>	[GTX2] = (24.8 ± 1.6) µg/g; [GTX3] = (8.0 ± 0.7) µg/g Purity ≥ 99 %	15 µg	Amber glass vial (approx. 0.5 ml) Liquid. Aqueous [HCl] = 0.003 M, pH = 2.48
N-sulfocarbamoyl-gonyautoxins 2 & 3	CRM-00-C1&2 <b>Lot: 12-001</b>	[C1] = (40.1 ± 2.4) µg/g; [C2] = (11.5 ± 0.9) µg/g Purity ≥ 99 %	25 µg	Amber glass vial (approx.. 0.5 ml) Liquid. Aqueous [AcOH] = 25·10 <sup>-6</sup> M, pH = 4.92
N-sulfocarbamoyl-gonyautoxins 1&4	CRM-00-C3&C4 <b>Lot: 20-001</b>	[C3] = (12.6 ± 0.9) µg/g; [C4] = (3.35 ± 0.32) µg/g Purity ≥ 97%	8 µg	Amber glass vial (approx. 0.5 ml) Liquid. Aqueous [AcOH] = 25·10 <sup>-6</sup> M
Decarbamoylgonyautoxins-2&3	CRM-00-dcGTX2&3 <b>Lot: 22-001</b>	[dcGTX2] = (21.9 ± 1.4) µg/g; [dcGTX3] = (8.1 ± 0.8) µg/g Purity ≥ 97 %	15 µg	Amber glass vial (approx. 0.5 ml) Liquid. Aqueous [HCl] = 0.003M, pH 2.57
Gonyautoxin-5	CRM-00-GTX5 <b>Lot: 22-001</b>	[GTX5] = (20.2 ± 1.2) µg/g Purity > 99 %	10 µg	Amber glass vial (approx.. 0.5 ml) Liquid. Aqueous [AcOH] = 25 µM, pH =5.00
Decarbamoylsaxitoxin	CRM-00-dcSTX <b>Lot: 22-001</b>	[dcSTX] = (18.7 ± 1.6) µg/g Purity ≥ 99 %	10 µg	Amber glass vial (approx. 0.5 ml) Liquid. Aqueous [HCl] = 3 mM, pH = 2.45
Neosaxitoxin	CRM-00-NEO <b>Lot: 21-001</b>	[NEO] = (20.3 ± 1.2) µg/g Purity ≥ 99 %	10 µg	Amber glass vial (approx. 0.5 ml) Liquid. Aqueous [HCl] = 3 mM, pH = 2.62
Decarbamoylneosaxitoxin	CRM-00-dcNEO <b>Lot: 23-001</b>	[dcNEO] = (9.0 ± 0.7) µg/g Purity: ≥ 97 %	5 µg	Amber glass vial (approx. 0.5 ml) Liquid. Aqueous [HCl] = 3 mM, pH = 2.56

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Name	Sales Name	Concentration	Amount	Comments
Gonyautoxins 1 & 4	CRM-00-GTX1&4 Lot: 22-001	[GTX1] = $(33.8 \pm 1.9)$ µg/g; [GTX4] = $(8.0 \pm 0.6)$ µg/g Purity ≥ 99%	20 µg	Amber glass vial (approx. 0.5 ml) Liquid. Aqueous [HCl] = 0.003 M, pH = 2.52
Gonyautoxin 6	CRM-00-GTX6 Lot: 16-001	[GTX6] = $(10.0 \pm 0.5)$ µg/g Purity >96%	5 µg	Amber glass vial (approx. 0.5 ml) Liquid. Aqueous [AcOH] = 25 µM, pH = 4.85

<p><b>National Institute of Standards and Technology (NIST)</b>                  Material Measurement Laboratory. Standard Reference Materials.                  NIST, 100 Bureau Drive, Stop 2300, Gaithersburg, MD 20899-2300. USA Tel.: (301) 975-2200 Option 1, Fax (301) 948-3730.                  Email: <a href="mailto:srminfo@nist.gov/">srminfo@nist.gov/</a>                  Website: <a href="http://www.nist.gov/srm/">http://www.nist.gov/srm/</a> <a href="https://www-s.nist.gov/srmors/view_detail.cfm?srms=8642a">https://www-s.nist.gov/srmors/view_detail.cfm?srms=8642a</a></p>				
Name	Sales Name	Concentration	Amount	Comments
FDA Saxitoxin dihydrochloride solution	RM 8642a	[STX] = $(103 \pm 2)$ µg/g	5 ampoules x 1.2 mL	Solution of saxitoxin containing a hydrochloric acid concentration of 5 mM in 20% ethanol in water (volume fraction). Check the availability at their website.

<p><b>National Research Council Canada, NRC-CNRC</b> 1411 Oxford Street. Halifax, Nova Scotia B3H 3Z1                  Canada Tel.: 1-902 426-8281 / Fax: 1-902 426-5426                  Email: <a href="mailto:CRM-MRCBiotoxin-Biotoxines@nrc-cnrc.gc.ca">CRM-MRCBiotoxin-Biotoxines@nrc-cnrc.gc.ca</a> // <a href="mailto:CRM-MRCHalifax@nrc-cnrc.gc.ca">CRM-MRCHalifax@nrc-cnrc.gc.ca</a>                  Website: <a href="https://nrc.canada.ca/en/certifications-evaluations-standards/certified-reference-materials/list">https://nrc.canada.ca/en/certifications-evaluations-standards/certified-reference-materials/list</a></p>				
Name	Sales Name	Concentration	Amount	Comments
Saxitoxin dihydrochloride	CRM-STX-g	[STX] = $(61.4 \pm 2.4)$ µmol/L	0.5 mL	Certified calibration solution of STX in aqueous 0.5 mM hydrochloric acid.
Neosaxitoxin	CRM-NEO-d	[NEO] = $(65.1 \pm 2.1)$ µmol/L	0.5 mL	Certified calibration solution of NEO in aqueous 0.5 mM hydrochloric acid.
Decarbamoylsaxitoxin	CRM-dcSTX-c	[dcSTX] = $(65.3 \pm 2.6)$ µmol/L	0.5 mL	Certified calibration solution of dcSTX in aqueous 0.5 mM hydrochloric acid.

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<b>National Research Council Canada, NRC-CNRC1411 Oxford Street. Halifax, Nova Scotia B3H 3Z1</b> Canada Tel.: 1-902 426-8281 / Fax: 1-902 426-5426 Email: <a href="mailto:CRM-MRCBiotoxin-Biotoxines@nrc-cnrc.gc.ca">CRM-MRCBiotoxin-Biotoxines@nrc-cnrc.gc.ca</a> // <a href="mailto:CRM-MRCHalifax@nrc-cnrc.gc.ca">CRM-MRCHalifax@nrc-cnrc.gc.ca</a> Website: <a href="https://nrc.canada.ca/en/certifications-evaluations-standards/certified-reference-materials/list">https://nrc.canada.ca/en/certifications-evaluations-standards/certified-reference-materials/list</a>				
Name	Sales Name	Concentration	Amount	Comments
Decarbamoylneosaxitoxin	CRM-dcNEO-d	[dcNEO] = (30.4 ± 1.7) µmol/L	0.5 mL	Certified calibration solution of dcNEO in aqueous 0.5 mM hydrochloric acid.
Gonyautoxin-1 & Gonyautoxin-4	CRM-GTX1&4-e	[GTX1] = (62.3 ± 3.4) µmol/L; [GTX4] = (14.7 ± 1.5) µmol/L; [GTX1&4] = 77.0 ± 4.9 µmol/L	0.5 mL	Certified calibration solution of GTX1 and GTX4 in aqueous 0.5 mM hydrochloric acid.
Gonyautoxin-2 & Gonyautoxin-3	CRM-GTX2&3-d	[GTX2] = (102.6 ± 4.0) µmol/L; [GTX3] = (43.5 ± 2.9) µmol/L; [GTX2,3] = (146.1 ± 6.9) µmol/L	0.5 mL	Certified calibration solution of GTX2 and GTX3 in aqueous 0.5 mM hydrochloric acid.
Gonyautoxin-5	CRM-GTX5-d	[GTX5] = (53.6 ± 2.9) µmol/L	0.5 mL	Certified calibration solution of GTX5 in dilute acetic acid (pH = 5).
Decarbamoylgonyautoxin-2 & Decarbamoylgonyautoxin-3	CRM-dcGTX2&3-d	[dcGTX2] = (107.1 ± 6.2) µmol/L; [dcGTX3] = (21.0 ± 2.0) µmol/L; [dcGTX2,3] = (128.1 ± 9.4) µmol/L	0.5 mL	Certified calibration solution of dcGTX2 and dcGTX3 in 0.5 mM hydrochloric acid.
N-sulfocarbamoyl-gonyautoxins 2&3	CRM-C1&2-c	[C1] = (94.4 ± 6.8) µmol/L; [C2] = (26.8 ± 1.9) µmol/L	0.5 mL	Certified calibration solution of C1 and C2 in dilute acetic acid (20 µM, pH 5).
Gonyautoxin-6	CRM-GTX6-b	[GTX6] = (13.2 ± 1.3) µmol/L	0.5 mL	Certified calibration solution of GTX6 in dilute acetic acid (pH 6).
Mussel tissue reference material for saxitoxin and related analogues	CRM-PSP-Mus	[STX] = (4.99 ± 0.33) µmol/kg; [GTX2] = (0.96 ± 0.13) µmol/kg; [GTX3] = (0.33 ± 0.05) µmol/kg	~8 g	Each bottle contains ~8 g of mussel homogenate. Certified values are assigned for STX, GTX2 and GTX3.

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<b>Sigma Aldrich</b> Web page: <a href="http://www.sigmaaldrich.com">http://www.sigmaaldrich.com</a>				
<b>Name</b>	<b>Sales Name</b>	<b>Concentration</b>	<b>Amount</b>	<b>Comments</b>
Neosaxitoxin solution	41619	20 µg/g in 3 mmol/l HCl in water	0.5 mL	20 µg/g in hydrochloric acid (nominal concentration)
Neosaxitoxin- <sup>15</sup> N <sub>7</sub> solution	41206	10 µg/g in 3 mmol/l HCl in water	0.5 mL	10 µg/g in hydrochloric acid (nominal concentration)
Saxitoxin- <sup>15</sup> N <sub>7</sub> dihydrochloride solution	30929	10 µg/g in 66.3 µmol/l HCl in water	0.5 mL	10 µg/g in hydrochloric acid (nominal concentration)
N-Sulfocarbamoylsaxitoxin solution, GTX5 solution, Gonyautoxin solution	18380	20 µM acetic acid in water	0.5 mL	Certified reference material, Manufactured by: Sigma-Aldrich Production GmbH, Switzerland

<b>MedKoo Biosciences</b> 2224 Sedwick Rd Suite 102 Durham, NC 27713, USA Tel: 919-636-5577, Fax: 919-980-4831 E-mail: <a href="mailto:sales@medkoo.com">sales@medkoo.com</a> Website: <a href="http://www.medkoo.com">http://www.medkoo.com</a>				
<b>Name</b>	<b>Sales Name</b>	<b>Concentration</b>	<b>Amount</b>	<b>Comments</b>
Decarbamoylneosaxitoxin	581999	>98% (or refer to the Certificate of Analysis)	1 mg 5 mg 10 mg	Solid powder. Soluble in DMSO