

Elenco dei materiali di riferimento/standard (ficotossine) commercialmente disponibili

(Il LNR-BM dichiara l'insussistenza di conflitto di interesse, anche solo potenziale, con alcuna delle Ditte di seguito elencate)

### BIOTOSSINE MARINE REGOLAMENTATE

| MATERIALI DI RIFERIMENTO/STANDARD                          |  | FORNITORI                         |
|--|--|-----------------------------------|
| AZASPIRACID GROUP  | AZA1; AZA2; AZA3; AZA mussel toxins;<br>AZA123 (mixed calibration);  | NRC-Canada                        |
|  | AZA1; AZA2; AZA3; AZA5; AZA4   | Laboratorio CIFGA                 |
|  | AZA1; AZA2; AZA3   | Santa Cruz<br>Biotechnology, Inc. |
|  | AZA1; AZA2; AZA3; Mussels tissue;  | Novakits                          |
|  | AZA1; AZA2; AZA3; Mussel tissue with: AZA1, AZA2, AZA3;  | Lab Service Analytica             |
| DOMOIC ACID GROUP  | Domoic Acid (DA);  | BlueBioTech                       |
|  | Domoic Acid  | Sigma-Aldrich/Merck               |
|  | Domoic Acid  | Laboratorio CIFGA                 |
|  | Domoic Acid; Domoic acid mussel tissue;  | NRC-Canada                        |
|  | Domoic Acid  | Enzo Life Sciences,<br>Inc.       |
|  | Acide domoique mussel tissue   | Novakits                          |
|  | Mussel tissue with domoic acid; DA;<br>Domoic Acid   | Lab Service Analytica<br>Axxora   |
| MULTIPLE MARINE TOXIN                                      | CRM-FDMT1 miscela di:<br>(DA+5'-epi-DA), (AZA1+37-epi-AZA-1), (AZA2+37-epi-AZA-2),<br>(AZA3+37-epi-AZA-3), OA, DTX1, DTX2, YT), PTX2,<br>(13-desMe-SPX C);   | NRC-Canada                        |
|  | Mussel matrix with DSP toxins: OA, DTX1, DTX3  | Laboratorio CIFGA                 |
| NEGATIVE CONTROL:<br>BLANK MUSSEL<br>REFERENCE<br>MATERIAL | Mus Zero   | NRC-Canada                        |
|  | Mussel tissue  | Novakits                          |
| OKADAIC ACID GROUP   | OA; DTX-1  | BlueBioTech                       |
|  | Okadaic acid; InSolution™ Okadaic acid;<br>Okadaic acid, Ammonium salt; Okadaic acid, Potassium salt;<br>Okadaic acid, Sodium salt;<br>Okadaic acid Prorocentrum;  | Sigma-Aldrich/Merck               |
|  | Okadaic acid; Okadaic acid, Ammonium salt; Okadaic acid, Sodium<br>salt; Okadaic acid, Potassium salt; Okaic acid,<br>methyl ester; Okadaic acid, C8-diol ester  | Enzo Life Sciences,<br>Inc.       |
|  | Okadaic acid; 7-O-Palmitoyl Okadaic Acid; DTX1; DTX2;<br>Mussel matrix DSP toxins (OA, DTX1, DTX3)   | Laboratorio CIFGA                 |
|  | Okadaic acid; Okadaic acid, Ammonium salt;<br>Okadaic acid, Sodium salt; Okadaic acid, C8-diol ester;<br>Okaic acid, methyl ester; Okadaic acid potassium salt; Okadaic acid,<br>Sodium salt; Okadaol;<br>Okadaic acid antibody; | Axxora                            |
|  | Okadaic acid; Okadaic acid, DTX-1, DTX-2; DTX-1; DTX-2;<br>Mussel tissue Okadaic acid  | NRC-Canada                        |

|                    |   |  |
|--------------------|---|--|
|                    | Okadaic acid, free acid; Okadaic acid, Ammonium salt; Okadaic acid, Sodium salt; Okadaic acid, Potassium salt;  | LC Laboratories                                |
|                    | Okadaic acid potassium salt from Prorocentrum concavum; Okadaic acid ammonium salt from Prorocentrum concavum; Okadaic acid sodium salt from Prorocentrum concavum; Okadaic acid solution; Okadaic acid, Potassium salt; Okadaic acid, Prorocentrum sp.;  | Sigma-Aldrich/Merck                            |
|                    | Acide okadaïque; Dinophysis toxine 1 (DTX1); Dinophysis toxine 2 (DTX2);  | Novakits                                       |
|                    | DTX1; DTX2; OA; Mussel tissue with: OA, DTX1, DTX2  | Lab Service Analytica                          |
|                    | Mussel matrix with DSP toxins (OA; DTX-1; DTX-3)  | Laboratorio CIFGA                              |
| PECTENOTOXIN GROUP | Pectenotoxin-2  | NRC-Canada                                     |
|                    | Pectenotoxine-2   | Novakits                                       |
|                    | Pectenotoxin-2  | Lab Service Analytica                          |
| SAXITOXIN GROUP    | STX; GTX;   | BlueBioTech                                    |
|                    | Pacific oyster PSP toxin matrix CRM;  | CEFAS  |
|                    | Saxitoxin in acetic acid; Mussel (dc-saxitoxin);  | EC – Directorate General Joint Research Centre |
|                    | Saxitoxin; Gonyautoxins 2&3 (GTX 2&3); N-sulfocarbamoyl- gonyautoxins 2&3 (C1&C2); Decarbamoylgonyautoxins- 2&3 (dcGTX 2&3); Gonyautoxin-5 (GTX5); Decarbamoylsaxitoxin (dcSTX); Neosaxitoxin (NEO); Decarbamoylneosaxitoxin (dcNEO); Gonyautoxins 1&4 (GTX 1&4); Gonyautoxin 6 (GTX6); N-sulfocarbamoyl gonyautoxins 1&4 (C3&C4)       | Laboratorio CIFGA                              |
|                    | FDA SaxitoxinDihydrochloride Solution;  | NIST   |
|                    | Saxitoxindihydrochloride (STX); Neosaxitoxin (NEO); Decarbamoylsaxitoxin (dcSTX); Decarbamoylneosaxitoxin (dcNEO); Gonyautoxin 1&4 (GTX 1&4); Gonyautoxin 2&3 (GTX 2&3); Gonyautoxin 5 (GTX5); Decarboylgonyautoxin 2&3 (dcGTX2&3); N-sulfocarbamoyl-gonyautoxins 2&3 (C1&C2); Gonyautoxin 6 (GTX6) PSP mussel tissue (STX, GTX2, GTX3) | NRC-Canada                                     |
|                    | N-Sulfocarbamoyl-Gonyautoxin-1 et 4 purified (C3&C4); N-Sulfocarbamoyl-Gonyautoxin-2 et 3 purified (C1&C2); Decarbomoyl gonyautoxin 2 et 3 (dcGTX2&3); Decarbomoyl neo-saxitoxine (dcNEO); Gonyautoxine 1 et 4 (GTX 1&4); Gonyautoxine 2 et 3 (GTX 2&3); Gonyautoxine 5 (GTX5); Neosaxitoxin (NEO); Saxitoxine diHydrochloride;         | Novakits                                       |
|                    | C1&C2; Decarbamoyl-gonyautoxin 2&3 (dcGTX2&3); dcNEO; dcSTX; GTX-1&4; GTX-2&3; GTX5; GTX6; NEO; STX;  | Lab Service Analytica                          |
|                    | Saxitoxin in acetic acid; Saxitoxin dihydrochloride solution; Mussel (dc-saxitoxin); Saxitoxin- <sup>15</sup> N <sub>7</sub> dihydrochloride solution; Neosaxitoxin solution (neoSTX);  | Sigma-Aldrich/Merck                            |

## ELENCO MATERIALI DI RIFERIMENTO

|                  |   |                       |
|------------------|---|-----------------------|
|                  | Neosaxitoxin- <sup>15</sup> N <sub>7</sub> solution;<br>N-Sulfocarbamoylsaxitoxin solution (GTX5); GTX-6 solution<br>Saxitoxins; [ <sup>15</sup> N]7 Saxitoxin dihydrochloride; | Eurofins Abraxis      |
| YESSOTOXIN GROUP | Yessotoxin (YTX); Homoyessotoxin (hYTX)   | NRC-Canada            |
|                  | Yessotoxin; Homoyessotoxin  | Laboratorio CIFGA     |
|                  | YTX   | BlueBioTech           |
|                  | Homoyessotoxine; Yessotoxine  | Novakits              |
|                  | Homoyessotoxin; YTX   | Lab Service Analytica |

## BIOTOSSINE MARINE A RISCHIO EMERGENTE

| MATERIALI DI RIFERIMENTO/STANDARD |   | FORNITORI               |
|-----------------------------------|---|-------------------------|
| CICLIC IMINES GROUP               | SPX1 (13-desmethyl spiroside C);<br>GYMNODIMINE (GYM); PINNATOXIN: PnTXG                                | NRC-Canada              |
|                                   | 20-methyl spiroside G; 13-didesmethyl spiroside C;<br>13,19-didesmethyl spiroside C;                    | Laboratorio CIFGA       |
|                                   | 13-desméthyl spiroside C (SPX1)   | Novakits                |
|                                   | 13-desméthyl spiroside C (SPX1)   | Lab Service Analytica   |
|                                   | PINNATOXINS (PnTX E, PnTXF, PnTXG)  | Sigma-Aldrich/Merck     |
|                                   | Tissu de moule – Mytilus edulis – Traces de spiroside<br>et pinnatoxines                                | Novakits                |
|                                   | Gimnodimine; Pinnatoxin-G; Pinnatoxin H; Portimine  | Novakits                |
|                                   | Gimnodimine; Pinnatoxin-G   | Lab Service Analytica   |
| BREVETOXINS                       | PbtX1; PbTX2; PbTX3; BTXB5  | Novakits                |
|                                   | BTX1; BTX2; BTX3; PbTx-2, <i>Ptychodiscus brevis</i> ;<br>Brevetoxin PbTx-3, <i>Ptychodiscus brevis</i> | Sigmaaldrich/Merck      |
|                                   | BTX2; BTX3; PbTx-1; BTX3 42-carboxylic Acid   | Axxora                  |
| TETRODOTOXIN GROUP                | Tetrodotoxin (TTX);   | NRC-Canada              |
|                                   | Tetrodotoxins   | Enzo Life Science, Inc. |
|                                   | TTX/4,9-anhydroTTX (anhTTX)/4-epiTTX  | Laboratorio CIFGA       |
|                                   | Tetrodotoxin  | Axxora                  |
| PALYTOXINS GROUP                  | Palytoxin   | FUJIFILM Waco Ch.       |
| CIGUATOXIN GROUP                  | CTX 3C; CTX ELISA 1B; Maitotoxin;   | FUJIFILM Waco Ch.       |
|                                   | Gambierone; 44-methyl-Gambierone  | Laboratorio CIFGA       |

## ELENCO MATERIALI DI RIFERIMENTO

### CIANOTOSSINE

| MATERIALI DI RIFERIMENTO/STANDARD |  | FORNITORI                |
|-----------------------------------|--|--------------------------|
| CYANOTOXINS GROUP                 | Anatoxin-a; Dihydroanatoxin-a cis, Homo-anatoxin-a, 13 C4-(+)-Anatoxin-a, Cylindrospermopsin; 7-epi-Cylindrospermopsin; 7-deoxy-Cylindrospermopsin; Microcystins; Microcystin HiLR; Microcystin LA; Microcystin LR, Microcystin LF; Microcystin LW; Microcystin LF Deuterated; Desmethyl Microcystin LR; Microcystin LR Deuterated; Microcystin LR Ethylated; Microcystin LY; Microcystin RR; Desmethyl Microcystin RR; Microcystins/Nodularins (ADDA); Microcystins/Nodularins (ADDA) Spiking Solution; Microcystins LR Check Samples; Microcystins MDL Study Solution; Microcystin WR; Microcystin YR; Microcystins MDL; Saxitoxins; Nodularins; BMAA; BMAA D3 | Eurofins Abraxis         |
|                                   | Anatoxin-a; Toxins from <i>Cylindrospermopsis</i> (Cylindrospermopsin); Toxins from <i>Microcystis</i> (Microcystin LR; Microcystin RR; Microcystin YR; Microcystin LR-RR-YR; Microcystin LW; Microcystin LF; Microcystin LY); Toxins from <i>Planktothrix</i> ([D-Asp3,(E)-Dhb7]-Microcystin RR); Toxin from <i>Nodularia</i> (Nodularin);  | Cyano Biotech GmbH       |
|                                   | Anatoxin-a; Cylindrospermopsin; Microcystin?LR; Microcystin?RR; Nodularin?R;   | Lab Service Analytica    |
|                                   | Microcystin-LR; Microcystin-RR; Microcystin-LF; Microcystin-LY; Microcystin-YR; Cylindrospermopsin; Anatoxin-a; Nodularin; Microcystin-RR  | Laboratorio CIFGA        |
|                                   | Microcystin-LR; Microcystin-RR; Microcystin-YR; Microcystin-LA; Microcystin-LF; Microcystin-LW; Microcystin-LY, Microcystin-WR; Desmethyl-LR; Desmethyl-RR; Nodularin; MIX-MC: LR, RR, YR; MIX-MC: LR, RR, YR, LA, Nodularine; MIX: MC LR,RR,YR,LA,LF,LW,LY, Nodularine Cylindrospermopsine; 7-deoxycylindrospermopsine; 7-epi-cylindrospermopsine; Anatoxine-a; HomoAnatoxine-a; L-BMAA; DAB DL-2,4-diaminobutyric acid Di HCl; AEG   | NRC-Canada               |
|                                   | Microcystin-LR; Microcystin-RR; Microcystin-YR; Microcystin-LA; Microcystin-LF; Microcystin-LW; Microcystin-LY, Microcystin-WR; Desmethyl-LR; Desmethyl-RR; Nodularin; MIX-MC: LR, RR, YR; MIX-MC: LR, RR, YR, LA, Nodularine; MIX: MC LR,RR,YR,LA,LF,LW,LY, Nodularine Cylindrospermopsine; 7-deoxycylindrospermopsine; 7-epi-cylindrospermopsine; Anatoxine-a; HomoAnatoxine-a; L-BMAA; DAB DL-2,4-diaminobutyric acid Di HCl; AEG   | Novakits                 |
|                                   | L-BMAA hydrochloride; $\beta$ -N-Methyl-d <sub>3</sub> -amino-DL-alanine- <sup>15</sup> N <sub>2</sub> ; Nodularin   | Sigma-Aldrich/Merck      |
|                                   | Microcystin-LA; Microcystin-LF; Microcystin-LR; Microcystin-LW; Microcystin-LY; Microcystin-RR; Microcystin-YR; Microcystin-WR   | Enzo Life Sciences, Inc. |
|                                   | Cylindrospermopsin; [D-Asp3]microcystin-RR; [D-Asp3]microcystin-LR; Microcystin-LR monoclonal antibody; Microcystin-HiLR; Microcystin-HtyR; Microcystin-LA; Microcystin-LF; Microcystin-LR; Microcystin-LY; Microcystin-RR; Microcystin-LW; Microcystin-YR; Microcystin-WR; Microcystins (Adda specific) ELISA kit; Nodularin;   | Axxora                   |

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(in giallo modifiche rispetto alla versione precedente)