

Rapid screening fluorescence method applied to detection and quantitation of paralytic shellfish toxins in invertebrate marine vectors

Masias, Daisy

Gómez, Kelly

Contreras, Cristóbal

Gaete, Leonardo

García, Carlos

A rapid screening method is described for the determination of paralytic shellfish toxins (PST), in fresh marine vectors (bivalves and gastropods), at levels ranging from 0.05 to 5.0 mg STX-eq kg⁻¹. PST are extracted from marine vector homogenates with acetic acid according to the Pre-COX-LC-FLD method. At the same time, the obtained extract is oxidised simultaneously in hydrogen peroxide and periodate oxidate to determine PST, non-N-hydroxylated and N-hydroxylated toxins, respectively. Then, they are analysed using a microplate fluorometer (Ex: 335 nm/Em: 405 nm). All the samples were compared with the liquid chromatography post-column oxidation method. Recoveries of PST added to fresh and processed marine vectors averaged 93.9% with a coefficient of variation of 6.1%. Both methods showed a good linear regression ($r^2 = 0.97$). The method shows good intra- and inter-day precisions with a relative coefficient of variation of 3.8% and 5.7%, respectively. The limit of quantification of the rapid screening fluorescence method was 0.082 mg STX-eq kg⁻¹, with 5% false positives. The established rapid screening fluorescence methods offer highly effective and verifiable pre-analyses of PST contamination in marine vectors and can be used for routine screening of the PST in seafood before formal identification by confirmatory methods (Pre-COX LC-FLD method, Lawrence method).