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Production of a monoclonal antibody against oxytetracycline and its application for oxytetracycline residue detection in shrimp

抗土霉素单克隆抗体的制备及其在虾中土霉素残留的检测应用

Key words: Oxytetracycline, Monoclonal antibody, Enzyme-linked immunosorbant assay(ELISA), Shrimp

关键词：土霉素；单克隆抗体；酶联免疫吸附测定法（ELISA）；虾

- Oxytetracycline (OTC) is a broad spectrum antibiotic. It is authorized for use in medicated feed in aquaculture.

- Overuse and insufficient lengths of withdrawal periods lead to OTC residues in aquaculture product.

- Concerning about food safety, to prevent harmful health effects in consumers due to OTC residues, maximum residual limits (MRLs) have been established for OTC.

- Many analytical method have been reported to monitoring OTC residues such as HPLC , LC-MS and ELISA

- ELISA has become a method of choice for monitoring because of its high sensitivity, simplicity, cost effectiveness and ability to screen large numbers of samples in a short period.

- In this study, an OTC-bovine serum albumin (BSA) conjugate was prepared and used in the immunization of mice. A conventional somatic cell fusion technique was used to generate secreting hybridomas denoted 2-4F, 7-3G and 11-11A.
- An indirect competitive ELISA (icELISA) was applied to measure the sensitivity and specificity of each MAb in terms of its 50% inhibitory concentration (IC_{50}) and % cross-reactivity, respectively. MAb 2-4F exhibited the highest sensitivity, with an IC_{50} of 7.01 ng/ml.
- This MAb showed strong cross-reactivity to rolitetracycline, but no cross-reactivity to other unrelated antibiotics.
- MAb 2-4F was used to detect OTC from shrimp samples by icELISA , the recoveries and the coefficients of variation of the assays were within acceptable ranges.
- These findings indicate that this MAb could be applied to develop a test kit for monitoring of OTC residues in aquaculture food.