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Evaluating the effect of fisheries on the examination of conventional drugs in freshwater

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ABSTRACT

Antibiotics have historically been used to treat illnesses brought on by dangerous germs in both humans and animals. The rapidly growing aquaculture business uses a variety of antibiotic classes, which could leave antibiotic residues in the nearby aquatic environment and cause the products to increase bacterial resistance. The objective of this study was to optimise, validate, and apply a solid-phase extraction (SPE) method in conjunction with liquid chromatography (LC)-LTQ/Orbitrap mass spectrometry to identify the most frequently used antibiotics in waters sampled from freshwater and saltwater fish farms in Greece. The approach was validated under ideal circumstances, with recoveries ranging from 57.7% for sulfamethoxazole in river water to 95.8% for florfenicol in river water. Relative standard deviations (RSDs) 15.9%, with technique quantification limits in all cases between 0.25 and 10 ng•L1. By using the suggested methods, it was possible to detect traces of trimethoprim and oxytetracycline. The risk was determined to be medium to low in all cases by computing the risk quotient (RQ) for three trophic levels (8.013 106 RQ 0.496) or the mixture RQ (0.005 RQ 0.682), which was the final step in assessing the environmental risk presented by the conventional drugs found.

Keywords: Conventional Drugs ; Aquaculture; SPE

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INTRODUCTION

Global aquaculture is growing as a result of the concurrent rise in seafood demand and loss in wild fisheries that can be caught [1]. When it comes to the prevention or treatment of bacterial infections in people, animals, and aquatic species, conventional drugs have shown good success throughout the years. The tremendous growth of aquaculture and the excessive use of conventional drugs have caused substantial hazards to aquatic ecosystems through direct release and to human health through food habits, even though the major input of these substances is crucial [2]. Commercial conventional drugs were created many years ago, and since then, they have multiplied greatly in terms of diversity and quantity [3]. Among Conventional Drugs approved for use in aquaculture, oxytetracycline (tetracycline), sarafloxacin (fluoroquinolone), florfenicol (amphenicol), erythromycin (macrolide), sulfadimethoxine, sulfamethoxazole (sulfonamides), trimethoprim (diaminopyrimidine), and oxolinic acid (quinolone) are the most frequently used [4]. The usage and concentration of conventional drugs in aquaculture and food, however, are governed by national laws in each nation [5]. The World Organisation for Animal Health (WOAH) created the Aquatic Animal Health Code (AAHC) to set standards and maximum residue limits (MRLs) for the responsible use of antimicrobial drugs in aquatic animals [6]. As a result, a list of veterinary conventional drugs has been released, attempting to strike the optimal balance between the interests of animal health and those of public health [7].

Optimization and validation

In conclusion, the most often found conventional drugs in freshwater and ocean samples impacted by nearby aquaculture facilities were oxytetracycline and trimethoprim [8]. This is because these two chemicals are among the most often utilised antibiotic compounds in both saltwater and freshwater fish farms. The centre of seawater fish farms had higher oxytetracycline concentration levels than the rest of the farms, which is easily explained by the diluting of the concentration by the sea currents as you move away from the centre. Additionally, oxytetracycline was found in samples from fish farms that used river water, and as has been noted, the concentration dropped as we got closer to the estuary [9]. It is important to note that the river had a significant volume at the time of sampling, which may help to explain why no compounds were found outside of the unit [10].

CONCLUSION

The most frequently utilised antibiotic compounds in freshwater and saltwater fish farms have been identified using a focused analytical process based on SPE followed by high resolution LC-LTQ/Orbitrap MS analysis. The method's suitability for use in sea and river water samples impacted by neighbouring aquacultures was demonstrated by its excellent analytical features (accuracy, precision, linearity, and limits of quantification). Waters were gathered from the appropriate Greek sample sites. Other Conventional Drugs were absent or below quantification limits in all test locations, although oxytetracycline and trimethoprim were typically discovered at quantities below 84.4 ng L1.

REFERENCES

1. **Reche Isabel, D'Orta Gaetano, Mladenov Natalie, et al.** Deposition rates of viruses and bacteria above the atmospheric boundary layer. *ISME J*. 2018; 12 (4): 1154–1162.
2. **Wurl Oliver, Holmes Michael**. the gelatinous nature of the sea-surface microlayer. *Mar Chem*. 2008; 110: 89-97.
3. **Pedergnana Antonella, Cristiani Emanuela, Munro Natalie, et al.** early line and hook fishing at the Epipaleolithic site of Jordan River Dureijat (Northern Israel). *PLOS ONE (PLoS)*. 2021; 16: 0257710.
4. **Jones Benjamin L, Unsworth Richard KF.** the perverse fisheries consequences of mosquito net malaria prophylaxis in East Africa. *Ambio*. 2019; 49: 1257-1267.
5. **Liu Owen R, Thomas Lennon R, Clemence Michaela, et al.** An Evaluation of Harvest Control Methods for Fishery Management. *Rev Fish Sci Aqua.* 2016; 24: 244-263.
6. **Davies TE, Beanjara N, Tregenza T.** A socio-economic perspective on gear-based management in an artisanal fishery in south-west Madagascar. *Fish Manag Ecol.* 2009; 16: 279-289.
7. **McManus John.** mOffshore Coral Reef Damage, Overfishing, and Paths to Peace in the South China Sea. *Int J Mar Coast Law.* 2017; 32: 199-237.
8. **Bruton, Michael N** (1996) Alternative life-history strategies of catfishes. *Aqua Liv Resour.* 1996; 9: 35-41.
9. **Langecker, Thomas G, Longley Glenn.** Morphological Adaptations of the Texas Blind Catfishes Trogloglanis pattersoni and Satan eurystomus (Siluriformes: Ictaluridae) to Their Underground Environment. *Copeia.* 1993; (4): 976-986.
10. **Langecker, Thomas G, Longley, et al.** Morphological Adaptations of the Texas Blind Catfishes Trogloglanis pattersoni and Satan eurystomus (Siluriformes: Ictaluridae) to Their Underground Environment. *Copeia.* 1993; 1993 (4): 976-986.