# USE OF MEDICINES AND FISH MEDICATIONS IN THE NIGERIAN AQUACULTURE AND ORNAMENTAL FISH INDUSTRY.

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## 1. Introduction

Aquaculture and ornamental fish keeping are rapidly growing sectors in Nigeria, contributing to food security, livelihoods, and recreation. The fish industry therefore, continue to be one of the most virgin investment areas in Nigeria (Awoyomi *et al.,* 2012). However, the use of medicines in fish culture poses significant risks to fish health, public safety, and the environment. The persistence of antibiotic residues in fish is fast becoming a global health problem (Efejene, *et al.,* 2025). Indiscriminate drug use in aquaculture is a recognized contributor. This study investigated the extent of medicine use in Nigerian aquaculture and ornamental fish practices, focusing on the types of drugs used and the level of professional oversight.

## 2. Materials and Methods

Surveys was conducted between February and August 2025 across fish farms, aquarium shops, and ornamental fish hobbyists in Nigeria (Abuja, Kaduna, Lagos, Port Harcourt, Umuahia) using structured questionnaires. The questionnaires was administered to respondents, capturing information on: types of medicines used in fish treatment, frequency of use, sources of prescription and advice, and perceptions of drug effectiveness and regulation. Interview and questionnaire responses was




Figure 1: Map of Nigeria showing the sample towns

analyzed using descriptive statistics to determine percentages and frequency distributions.

## 3. Results and Discussion:

Most of the drugs reported were not manufactured for fish use. They included antibiotics, disinfectants, and herbal extracts. The findings highlight widespread use of medicines in Nigerian aquaculture and ornamental fish keeping. Antibiotic was very popular across the locations. This finding supports the report of De Paola et al., (1995) exposing antibiotics use and concerns about antimicrobial resistance.

Our findings showed Oxytetracycline (42%), tetracycline (27%), procaine (20%), erythromycin (6%), and others (5%) was extensively used. This report exposes the kinds of antibiotics in use in the country and ends the era of lack of information on the kind of antibiotics used in Nigerian livestock and fish farming as reported earlier by Efejene, et al., (2025). Indiscriminate use of antibiotics for veterinary purposes has increasingly become a matter of public concern (Awoyomi et al., 2012). 25% of respondents reported using herbal remedies for fish culture. The use of herbal remedies was only found among fish farmers. There was no report of use of herbal remedies by fish hobbyist and aquarium shops. Less than 5% of drug use was prescribed by fish professionals/fish health experts. 76% of respondents used non-fish specific medicines in treatment of fish. The use of non-fish-specific drugs suggests a lack of access to appropriate fish veterinary products and professional guidance. Herbal extracts, though less common, indicate attempts at alternative remedies but remain unregulated. Most drug recommendations was observed to be from near-by farms or from social media groups. Dosages was mostly by estimation and assumptions. Approximately 80% of medications used were not not produced specifically for fish use, and no monitoring of drug use was observed.

The absence of monitoring underscores the urgent need for policy




Plate 1: Some generic medicines used by fish farmers

intervention, training, and enforcement of drug use standards in aquaculture. Drug residue in fish could result first from improper usage of medicine or proper drug use but wrong managerial practices in fish husbandry (Awoyomi et al., 2012, Efejene, et al., 2025).

## 5. Conclusion

Medicine use in Nigerian aquaculture and ornamental fish keeping is prevalent, with antibiotics being the most used. Fish farmers in the country use drugs meant for poultry and other animals and humans to treat their fish and most often than not the fish are often under-dosed or overdosed as there are no prescriptions for use in fish. The lack of regulation and professional oversight poses risks to fish health, consumer safety, and environmental sustainability. Strengthening fish veterinary services, enforcing drug regulations, and promoting awareness among fish farmers and hobbyists are critical steps toward responsible medicine use.

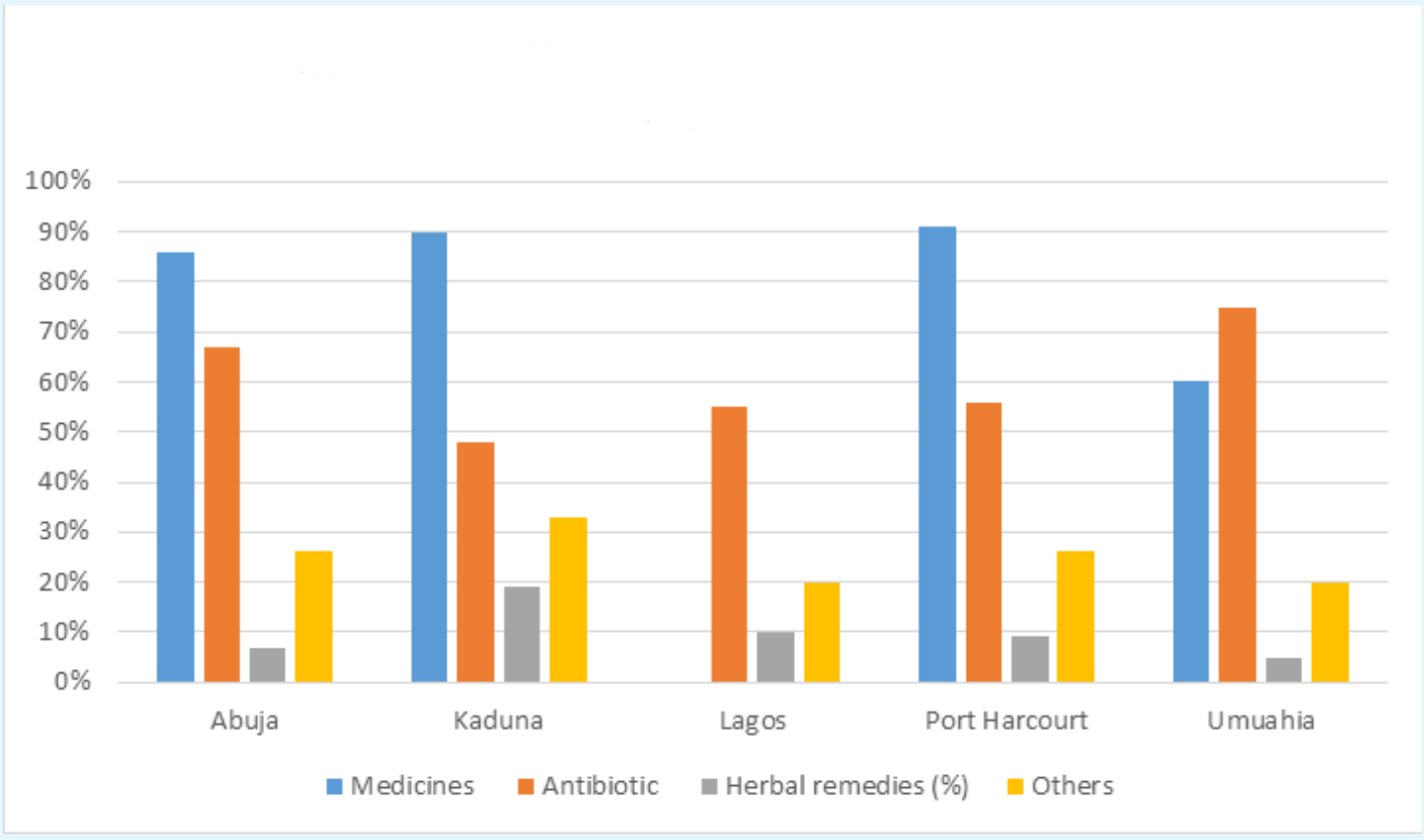



Figure 2: Medicine usage pattern in Nigerian towns for aquaculture and ornamental fish.

References

1. Adelowo O.O. &Okunlola I. (2019). Field assessment of antibiotic use in fish farms in Southwestern Nigeria. Rev. Elev. Med. Vet. Pays Trop., 72 (4): 187-191.
2. Alderman, D.J. &Hastings, T. S. (2003). Antibiotic use in aquaculture: development of antibiotic resistance –potential for consumer health risks. International Journal of Food Science & Technology, 33(2):139-155.
3. Aliyu, L.A., Chukwudi, O. E., Janaidu K., Ibukun-Olu, B. P. and Barde, I. J. (2021). Assessment of antimicrobial drugs use and their residue in the farmed fish of Kaduna, Nigeria. Global Journal of Fisheries Science; 3(3):15-26.
4. Awoyomi, O. J; Kehinde, O.O.; Mobolaji, A. O. and Adebowalea, O. O. (2013). Survey of veterinary drugs in use in fish farms in Abeokuta, Ogun State. Nigeria Journal of Natural Science, Engineering and Technology. 11(2): 53-62.
5. De Paola, A., Peeler, J.T., Rodrick, G.(1995). Effect of oxytetracycline-medicated feed on antibiotic resistance of Gramnegative bacteria in catfish ponds. Applied and Environmental Microbiology, 61: 2335–2340.
6. Efejene, O. I; Ogbebor, P. O; Orororo, O. C; Busari, A. A; Olayemi, S. O; Oreagba, I. A; Igari, F, O.Aisuodionoe, M. E; Osirim, E. and Egbune, E. O.(2025). Evaluation of Pattern of Antibiotics Utilization among Fish Farmers and Detection of Tetracycline, Oxytetracycline and Ceftriaxone Residue in Fish Samples in Lagos, Nigeria. Asian Journal of Fisheries and Aquatic Research. 27.7, p143-157.
7. Felman A, Carter A, Pharm.D. (2019). Antibiotics: Uses, resistance and side effects. Medical News today.
8. Phares, C.A.; Danquah, A.; Atiah, K.; Agyei, F.K.; Michael, O.-T. & Ercoli, V. (2020). Antibiotics utilization and farmers' knowledge of its effects on soil ecosystem in the coastal drylands of Ghana. PLoS ONE2020, 15, e0228777.
9. Green, W., Teichert-coddington, D. R. (2000). Human food safety and environmental assessment of the use of 17 alphamethyltestosterone to produce male Tilapia in the United States. J. World Aqua. Soc., 31:

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