



Antibiotic Use in Rearing Bees, Chicken and Fish for Food: Practice and Policy in India

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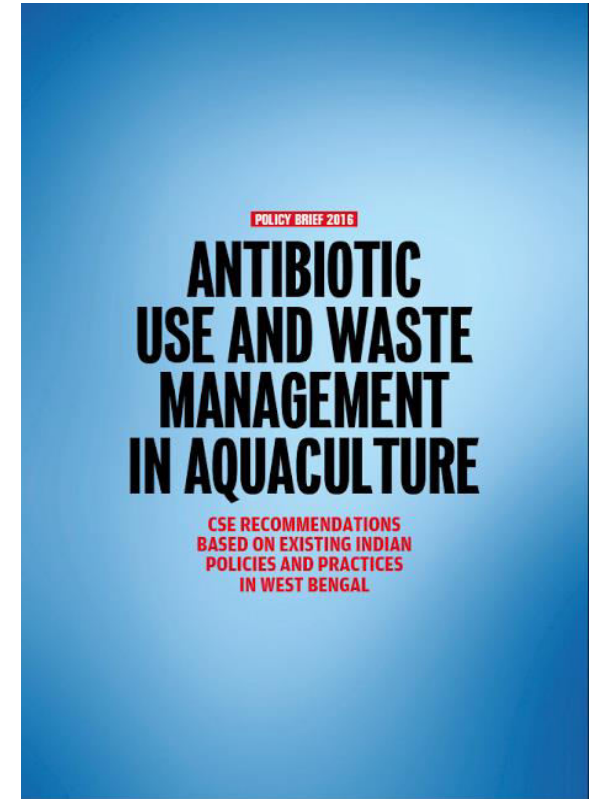
CSE studies: Antibiotic use in food animals



2010



2014



Sept 2016

Residue tested by CSE's Pollution Monitoring Laboratory

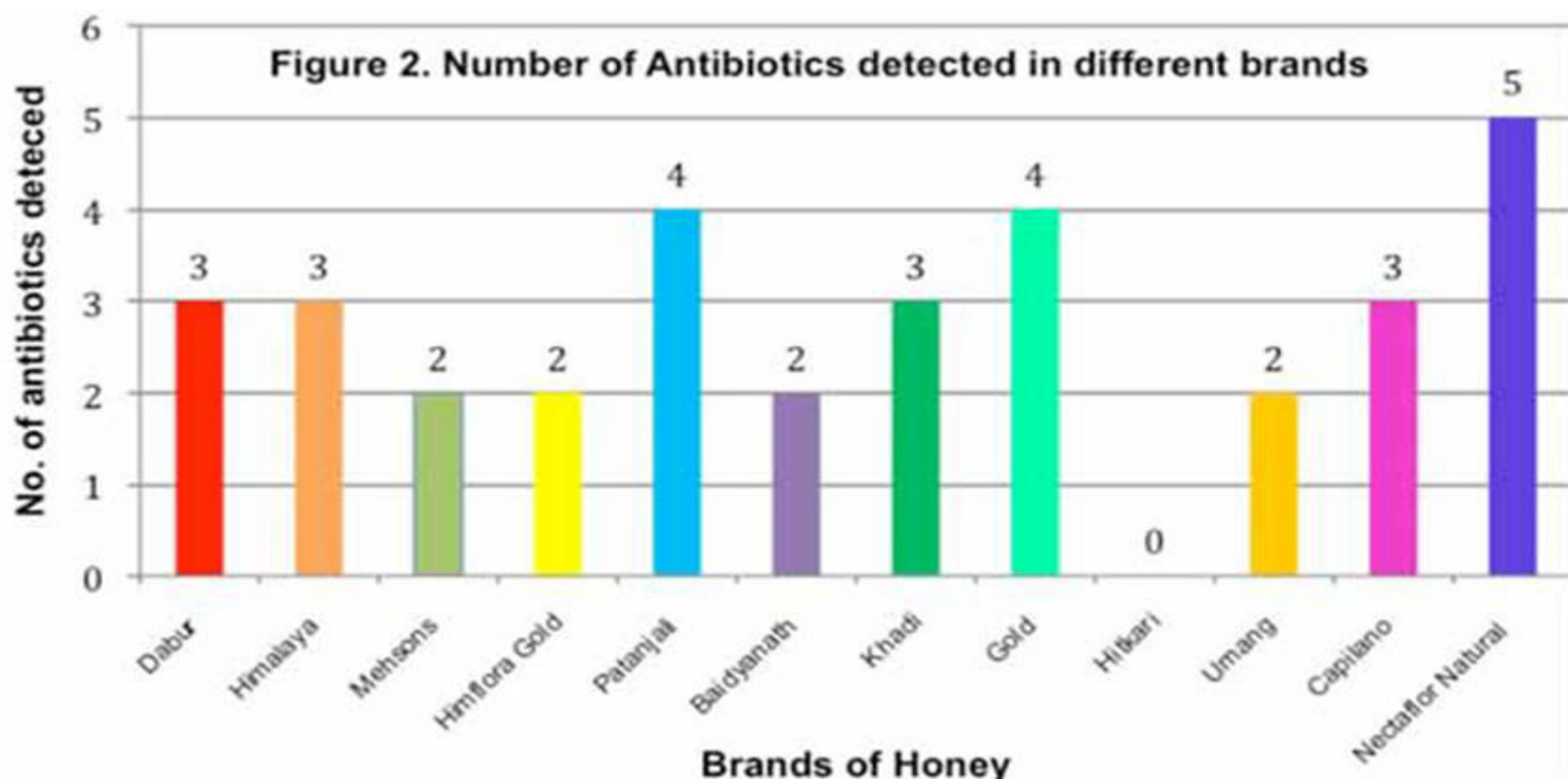


Antibiotics in Honey, 2010

- 12 branded honey samples
 - 10 domestic
 - 2 imported
- Domestic brands include Dabur Honey (75% market share)
- International brands
 - Capilano Pure & Natural Honey (Australia)
 - Nectaflo Natural Blossom Honey (Switzerland)
- Tested for six antibiotics:
 - Ampicillin, Chloramphenicol, Ciprofloxacin, Enrofloxacin, Erythromycin and Oxytetracycline

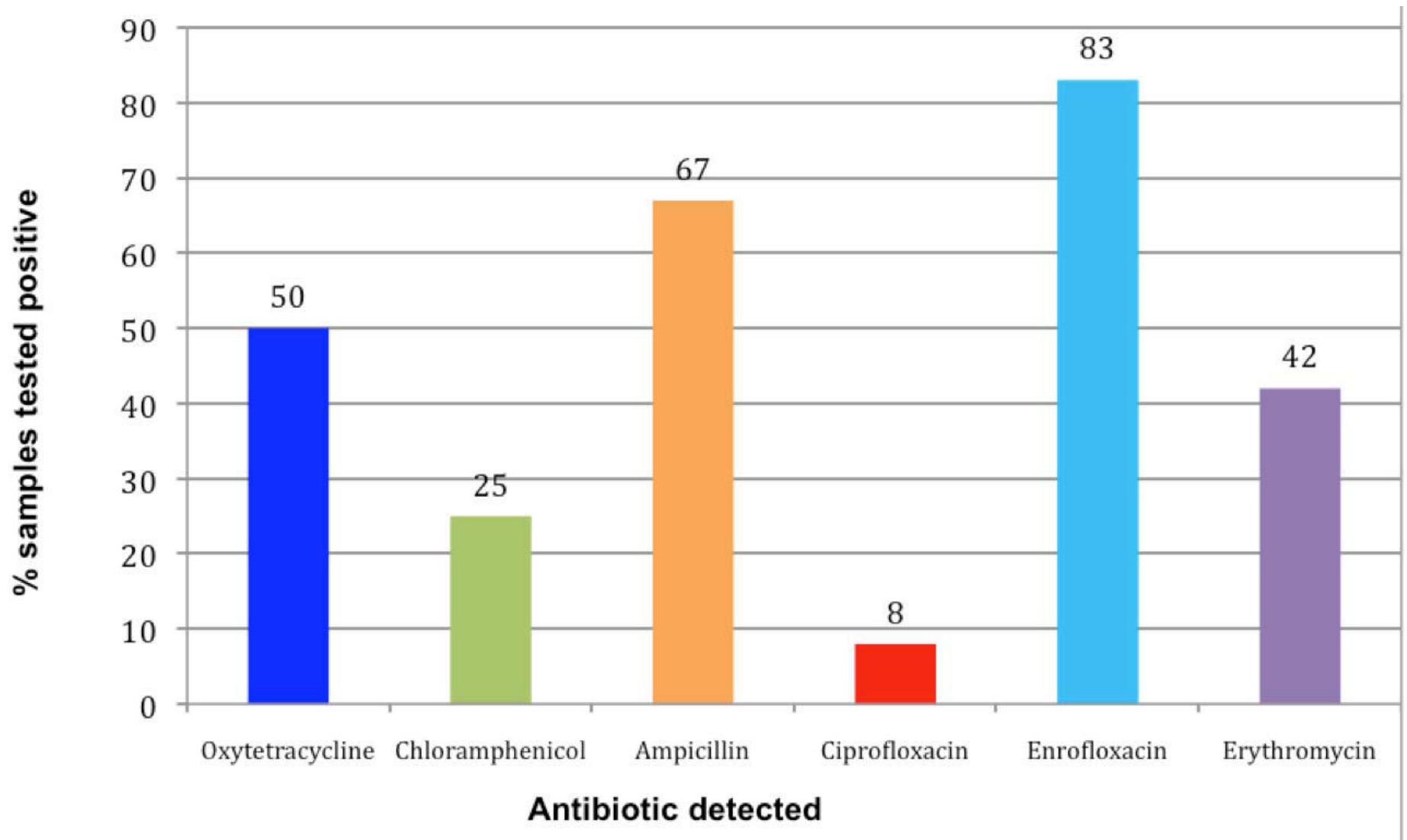
Antibiotics in Honey, 2010

- Residues of multiple antibiotics (2 to 5) tested were found in 11 out of the 12 samples, including both international brands





Antibiotics in Honey, 2010





Standards developed in 2014

- Tolerance limits set for select antibiotics in honey

Ampicillin	Chloramphenicol
Ciprofloxacin	Erythromycin
Nitrofurans and its metabolites	Enrofloxacin
Sulphonamides and its metabolites	Streptomycin
Tetracycline (Oxytetracycline and chlortetracycline)	Tylosin



Antibiotic residues in chicken meat, 2014

70 chicken samples from Delhi and near-by tested for six antibiotics

Results

- Antibiotics found in 40% of samples
- Five of six tested antibiotics were present
- Residues of multiple antibiotics in 17 percent samples
- Fluoroquinolones (Enrofloxacin and Ciprofloxacin) in about 28 percent (20) samples
- Tetracyclines (Oxytetracycline, Chlortetracycline, Doxycycline) in about 14 percent (10) samples



Antibiotic use in chickens for meat

- Rampant antibiotic use as growth promoters through feed
- Routine prophylactic administration an integral practice
- Antibiotics used through-out lifecycle and in parent stock
- Indiscriminate use of medically important antibiotics which were banned/restricted in certain countries and were among highest prescribed for humans in India
- Withdrawal periods not being followed



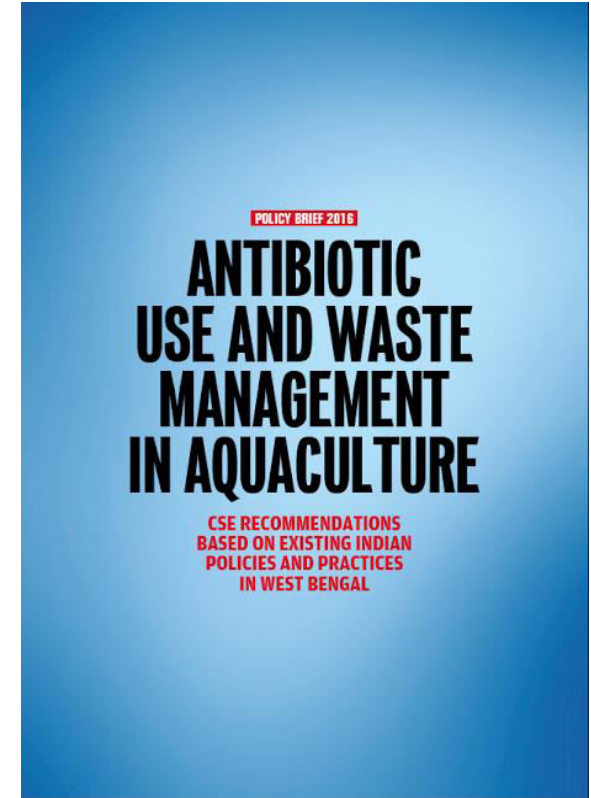
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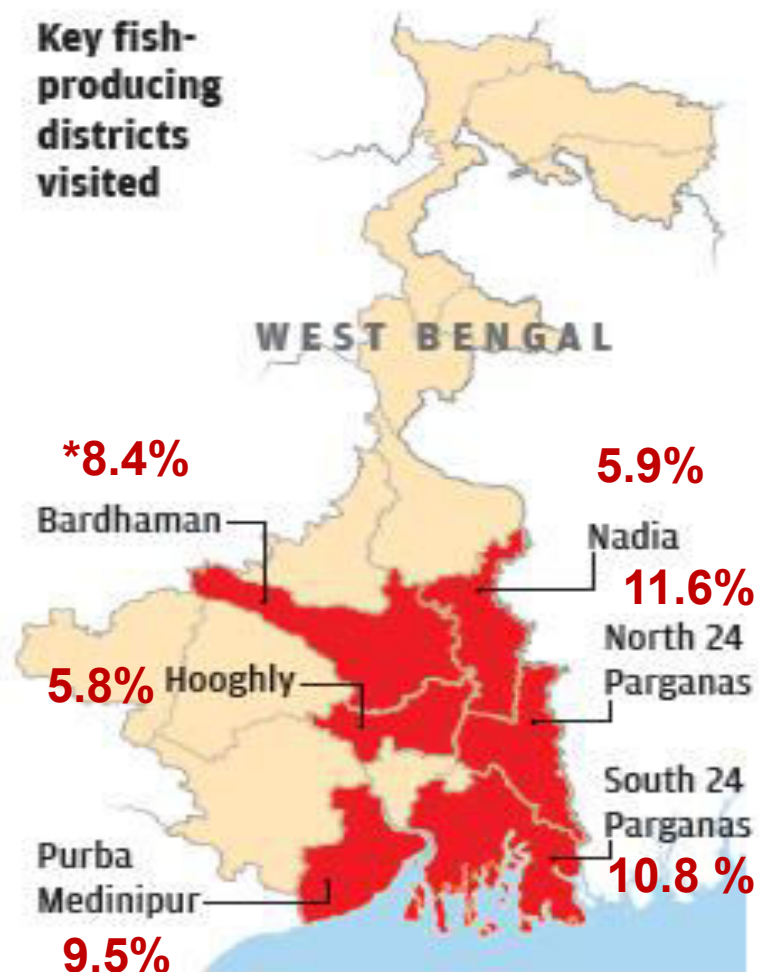


Residue tested by CSE's Pollution Monitoring Laboratory



Aquaculture farms visited in West Bengal – second biggest fish producer state

- At 6.6% share, India is second in global aquaculture production with ~100 lakh tonnes
- WB fish production: 16.7 lakh tonnes. About 86% is from inland fisheries, most of which is freshwater culture
- A total of **sixteen farms** and **six hatcheries** were visited in **six key districts** with high fish production
- These include traditional, **semi-intensive** and **intensive** freshwater and brackish water farms



**Contribution to total WB fish production*

Snapshot of antibiotics used



Cephalexin



Antibac containing 90% streptomycin



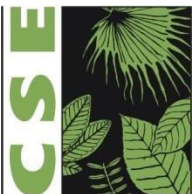
Augmentin



OTC sale of human grade antibiotics



Enrofloxacin, tetracycline, amoxicillin bottles picked from a freshwater farm



Antibiotics used include those which are critically important for humans

Antibiotic	Importance to human medicine*	Status as per CAA guidelines for brackish water
Oxytetracycline	Highly important	Permitted
Tetracycline	Highly important	
Enrofloxacin	Critically important	Prohibited
Ciprofloxacin	Critically important	
Norfloxacin	Critically important	
Ampicillin	Critically important	Not specified**
Dicloxacillin	Highly important	
Amoxicillin	Critically important	
Azithromycin	Critically important	
Cephalexin	Highly important	
Streptomycin	Critically important	
Kanamycin	Critically important	

*As per the WHO list of Critically Important Antimicrobials for Human Medicine (2011). ** This leads to a gap, i.e. such antibiotics could potentially be used as long as their residue is not detected



Practices of antibiotic use and availability

- **Farmers rely largely on peers, company representatives and self-discretion**
- **No professional disease management**
 - Fisheries science professionals not adequately trained and authorized to prescribe medicines; little thrust on fisheries in veterinary curriculum
 - Training manuals recommending growth promoter use
- **Unregulated availability of antibiotics**
 - Over-the-counter (OTC) sale of antibiotics across districts
 - Use of antibiotics labelled for animals but not for fish; limited awareness about required dosage and withdrawal periods
 - Use of antibiotics labelled for use in humans (including critically important)
 - Feed premix with antibiotics promoted online for improving growth (e.g. Colistin, Ciprofloxacin, Tetracycline, Furazolidone)



Key policy/information gaps– food animals, w.r.t. global best practices

- **No country-wide data/trends on antibiotic use** in food animals and humans
- **No national-level integrated surveillance data on antibiotic resistance**
- **No standards for antibiotic residues in chicken, milk.** Standards for few in fish. **No residue monitoring framework**
- **Unregulated availability of antibiotics in bulk.** No tracking mechanism to map production, distribution and consumption
- **Antibiotic growth promoters in feed available and marketed freely.** No prescription required; no labelling norms; no control on antibiotic mixed; marketed online with no checks
- No mandatory provisions for **farm hygiene and waste management**
- No actionable framework targeted at farmer or veterinarians to ensure/enforce judicious use of antibiotics
- **Freshwater culture remains largely unregulated;** Existing Indian policies and guidelines on fisheries are focused on export-oriented coastal aquaculture
- **No comprehensive multi-stakeholder action plan**



- **Ban/phase-off non-therapeutic use** – i.e. for growth promotion and mass disease prevention:
 - Prohibit antibiotic growth promoters in feed
 - Implement stringent control on import of feed supplements
 - Control online sale of growth promoters
- **Ban/phase-off use of critically important antibiotics**
- Ensure that a **licensed antibiotic** reaches a registered user through a registered distributor or stockist of veterinary medicines
- **Set antibiotic residue limits** in chicken, milk, eggs, fish etc; Create a monitoring framework that also supports testing of unapproved use
- Create an **integrated surveillance system** to monitor antibiotic resistance trends in humans, animals, food from animals and environment. A national-level database should be developed



- Create a nation-wide system to **monitor antibiotic use and trends**
- **Train veterinarians and farmers**; delink prescription and incentives
- Introduce a **labelling system** to incentivise those who are not using antibiotics
- **Biosecurity guidelines** to be issued and applied to all farms. Capacity of small farmers must be enhanced so that they can comply with the guidelines
- Encourage development and use of **alternative growth promoters**
- **Provide supporting measures** to small and mid-size farmers to reduce use of antibiotics and move to safe alternatives



For aquaculture only:

- A separate **regulatory framework for the freshwater fisheries** sector should be developed and adopted
- A national-level **programme for issuing 'POND HEALTH CARDS'** based on farm-specific assessment should be initiated
 - Implementation should be based on periodic testing and survey of water, sediment, inputs and farm produce for select parameters and diseases
- **A Fisheries Council** should be formed; Fisheries science professionals should be adequately trained and authorized to prescribe drugs



Thank you!
