



Fish on antidepressants

The story of an environmental threat and its possible solution

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Antidepressants



Antidepressants are drugs with a direct action on the brain's biochemistry through their interaction with **neurotransmitters** (1). These emerging contaminants are detected in aquatic systems and threaten the environment and public health.

Contamination

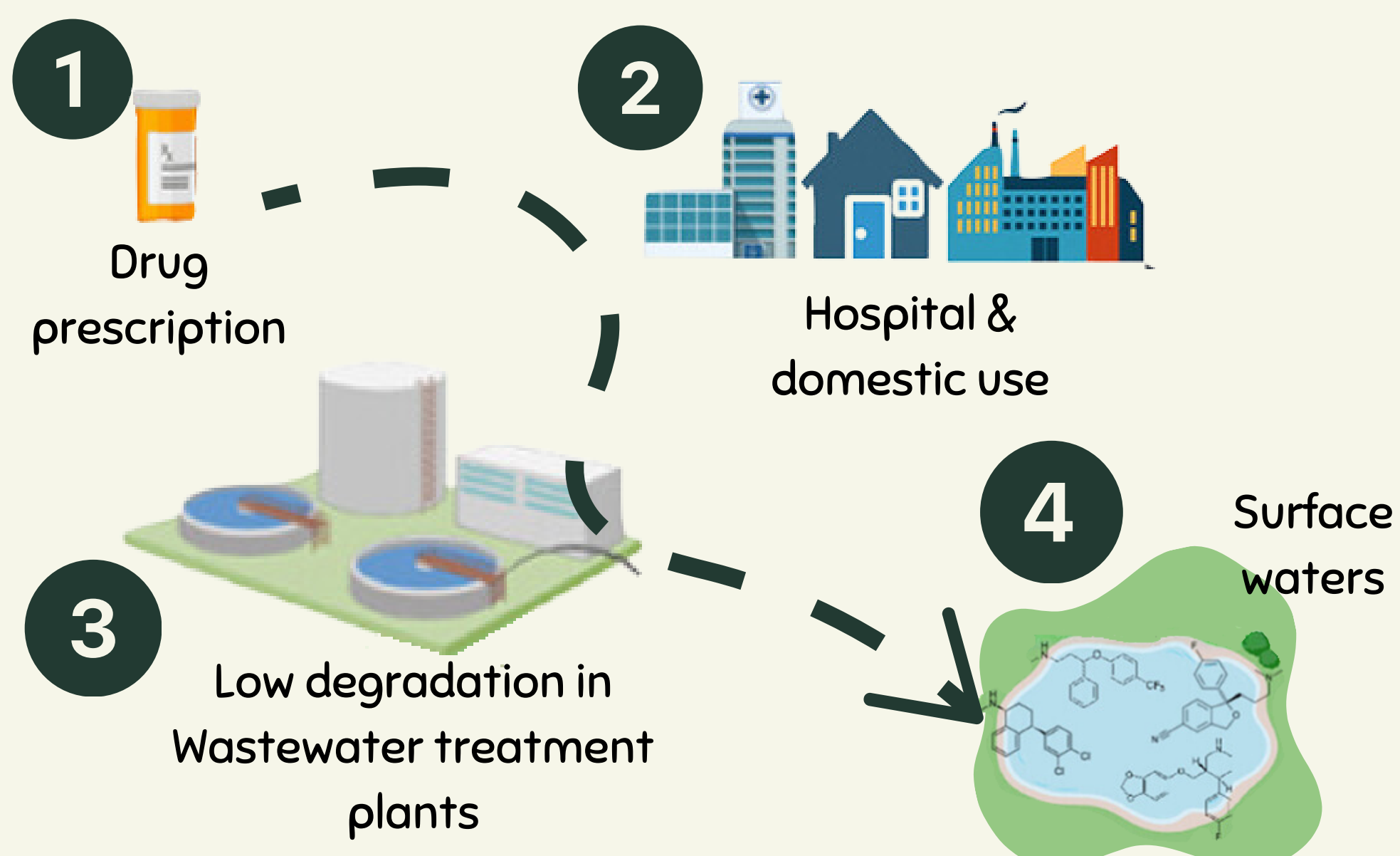


Fig. 1. Pharmaceutical introduction in the environment. Adapted from ref.(2).

Green chemistry



Chemical products should be designed to preserve functionality while reducing toxicity

How to?

- Choose synthetic routes using **non toxic compounds** when possible.
- **Minimize** the use of auxiliary **reagents and solvents**.
- **Prevent waste** instead of treating it.
- Design processes with **minimal energy requirements**.
- Design new products with **biodegradable** capabilities(4).

Consequences

Fish share many of the neurotransmitter and signaling pathways with humans, and are used as **test organisms** (3).

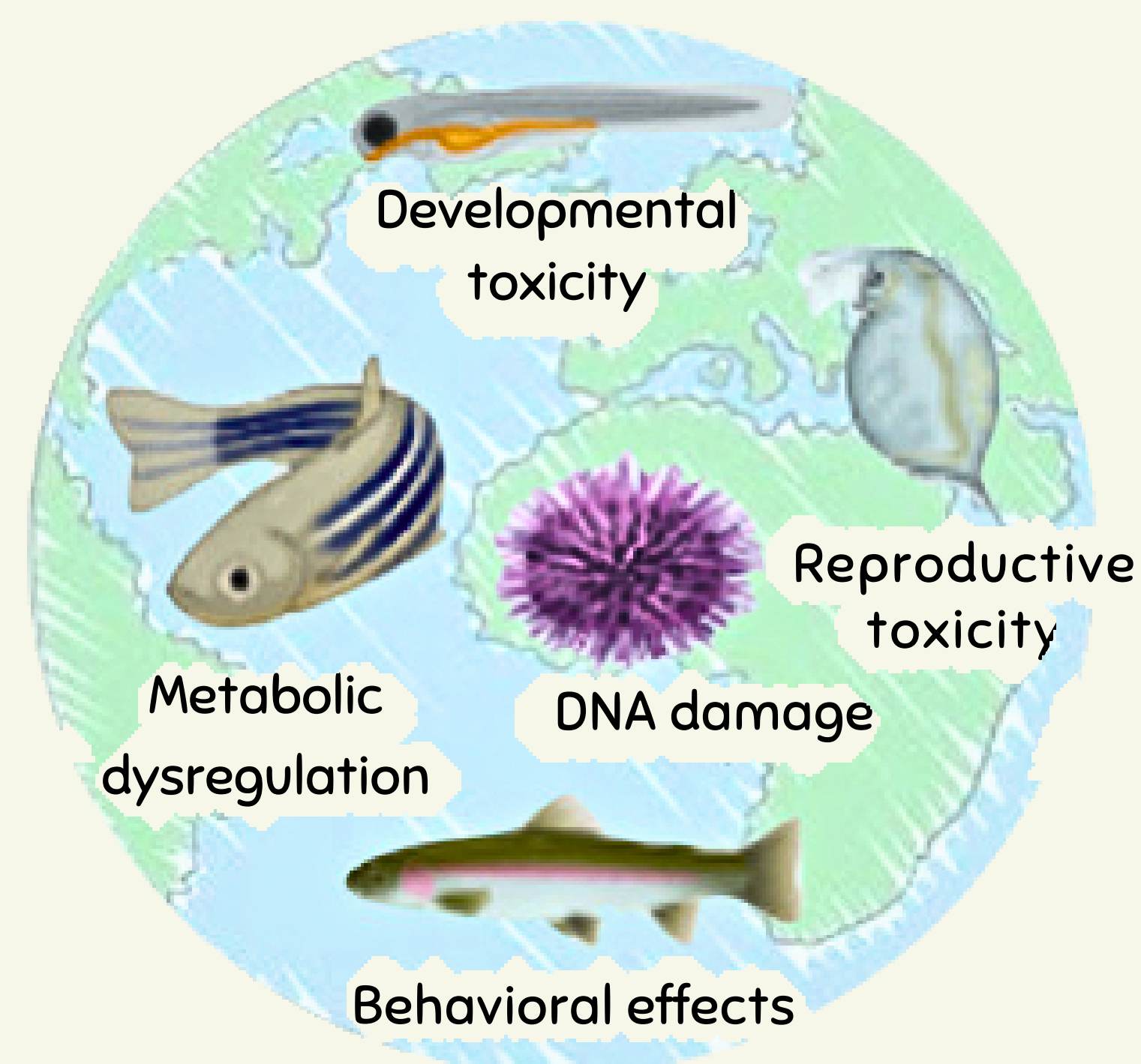


Fig. 2. Ecotoxicological effects on aquatic organisms. Adapted from ref. (2).

Conclusions

- Promote the rational use of drugs reducing their **unnecessary** and **inappropriate consumption**.
- Design pharmaceuticals that are more easily **biodegradable**.
- Improve **wastewater treatments**.

References

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