**Ecopharmacology: the Deliberated or Casual Dispersion of Pharmaceuticals in the Environment**

**Introduction**

The dispersion of pharmaceutical products in the environment is well known by researchers from at least 20 years ago. But this dispersion is generated in different countries around the world. The presence of drugs at trace levels in water is not unusual. There are many reasons to explain this dispersion, but the most important are:

- Manufacturing operations in the pharmaceutical industries (but this seems to be the less cause of dispersion).
- Improvements in drug accesses in the modern country, including growth in insurance coverage for drugs.
- Development of new and better medicines even more used for specific illness.
- Marketing strategies (sometimes excessive) of pharmaceutical industries.
- Drug expiry in the hands of the public or health care facilities. Large amounts of pharmaceutical products are discarded as their expiration date passes or they become unwanted. At this time, the correct disposal method of waste product is not clear to the general public. Consequently, waste is discharged through sewage systems and into the aquatic or terrestrial ecosystems.

Even though the impact of pharmaceuticals in the environment at trace levels has not been clearly determined, seems that some active molecules could have a biological effect even down to a few nanograms per litre in the aquatic or the terrestrial ecosystems.

**Problems and possible solutions**

Pharmaceutical products do not usually persist in the environment but continuous dispersion keep concentrations relatively constant, usually very small (e.g. ng/l, μg/l). Much is yet to be learned about the effects (particularly stress chronic in nature) of exposure to these molecule. The presence of these compounds include abnormal physiological processes and reproductive impairment, increased incidences of cancer, the potential to cause the emergence of antibiotic-resistant bacteria, and environmental effects on biota.

It is demonstrated that the extent of usage of antibacterial substances is closely related to the development of antibiotic resistance, so it comprised traditional therapeutic regimens, making treatment of infections more difficult.

Also, hormonally active chemicals, personal care products, and pharmaceuticals are designed to stimulate a physiological response in the human body. Potential concerns from these ingredients are that many of these compounds include abnormal physiological processes and reproductive impairment, increased incidences of cancer, the potential to cause the emergence of antibiotic-resistant bacteria, and environmental effects on biota.

Drugs are used for the benefit of humanity but their utilisation is expected to increase in future years due to the fact that population is growing, and in many places, such as the US or European countries, is ageing. Also, many new drugs are designed to treat diseases that previously were lethal or incurable. Moreover many factors influence the diffusion of drugs in water systems.

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