Poison, vitamin and food

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Abstract

In this paper, I describe poison, vitamin and food.
The paper ends with "The End"

Introduction

The knowledge of poison, vitamin, and food is **crucial** to every economy.
In this paper, I describe poison, vitamin and food.

Poison, vitamin and food

A **poison** is any substance that when **consumed** in positive quantities **harms** or **causes death** of an individual.

A **vitamin** is any substance that when **not consumed** in positive quantities **harms** or **causes death** of an individual.

A **food** is any substance that is **neither** a vitamin **nor** a poison.

The concept of ${}^{S}LD_{50}^{s}$

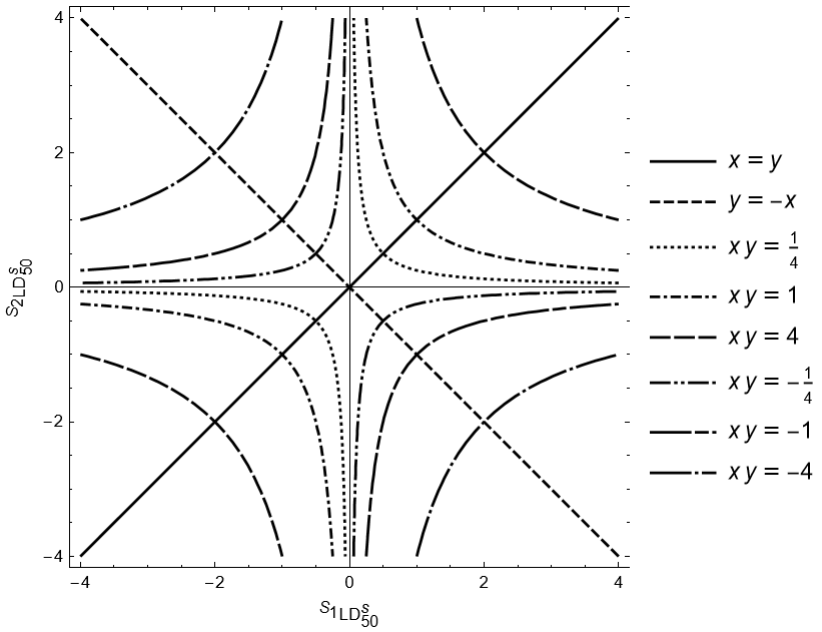
The **Lethal Dose 50** of a **substance** S for a **species** s (${}^{S}LD_{50}^{s}$) is the amount of the substance S that **causes death** of half of the individuals in a representative sample of that species.

Classifying a substance S for a species s using ${}^{S}LD_{50}^{s}$

If ${}^{S}LD_{50}^{s} > 0$, then the substance S is a poison for the species s.
If ${}^{S}LD_{50}^{s} < 0$, then the substance S is a vitamin for the species s.
If ${}^{S}LD_{50}^{s} = 0$, then the substance S is a food for the species s.

Species diagram

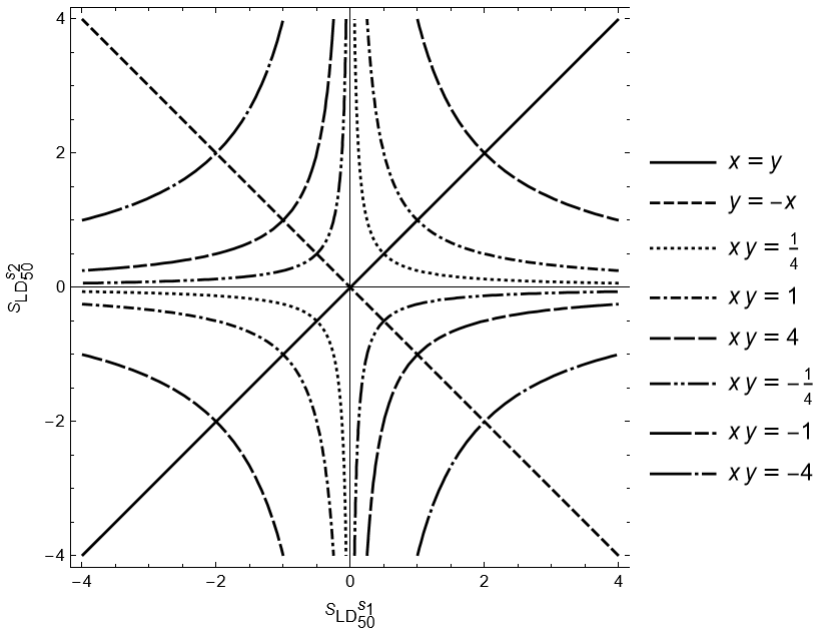
For a **fixed** species s and two substances S_1 and S_2, the **species diagram of** s is a two-dimensional Cartesian co-ordinate plane where the X-axis represents ${}^{S_1}LD^s_{50}$ and the Y-axis represents ${}^{S_2}LD^s_{50}$.



A species diagram showing the two isoclines and some hyperbolic level curves.

Substance diagram

For a **fixed** substance S and two species s_1 and s_2, the **substance diagram of** S is a two-dimensional Cartesian co-ordinate plane where the X-axis represents ${}^{S}LD^{s_1}_{50}$ and the Y-axis represents ${}^{S}LD^{s_2}_{50}$.



A substance diagram showing the two isoclines and some hyperbolic level curves.

Hyperbolic level curves

A **hyperbolic level curve** with level c in a species/substance diagram is the curve $xy = c$.

The two isoclines

The two isoclines in any species/substance diagram are the lines $y = x$ and $y = -x$, with the former called the **standard isocline** and the latter called the **special isocline**.

The truth of each species

For each species s, there exists at least one substance $S(s)$ with a positive ${}^{S(s)}LD_{50}^{s}$.substance
In simpler words, each species can be poisoned by at least one substance.

The truth of each substance

For each substance S, there exists at least one species $s(S)$ with a positive ${}^{S}LD_{50}^{s(S)}$.
In simpler words, each substance can be poison for at least one species.

The End