Why Immunodepressive Drugs Often Make People Happier

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Abstract Many immunodepressive drugs have an unusual side effect on the patient's mood: they often make the patient happier. This side hae been observed for many different immunodepressive drugs, with different chemical composition. Thus, it is natural to conclude that there must be some general reason for this empirical phenomenon, a reason not related to the chemical composition of any specific drug – but rather with their general functionality. In this paper, we provide such an explanation.

1 Formulation of the problem

Description of the phenomenon. The purpose of most medical drugs is to cure physical diseases. In addition to fulfilling their main purpose, many drugs also have side effects.

Most side effects unfavorably affect physical conditions. For example some drugs cause an increase in blood pressure, some cause nausea.

Interestingly, some drugs also have an effect on mood. For example, statistics has shown that many immunodepressive drugs affect people's mood. In most cases when mood is affected, drugs make people feel happier; see, e.g., [1, 2, 3, 4, 5, 6].

Comment. To be more precise, a similar effect is known for most drugs: people start feeling better – and thus, get in a better mood – just by taking the medicine. However, for immunodepressive drugs, this mood-changing effect is much larger than for drugs of any other type.

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This phenomenon is universal. Interestingly, this effect is observed for different immunodepressive drugs. This means that this happiness effect is not caused by a specific chemical composition of a drug.

This effect seems to be universal. So, there must be a general explanation for this effect that does not use chemical specifics.

What we do in this paper. This explanation is what we try to come up with in this paper.

2 Why do we need immmunodepressive drugs?

To provide the desired explanation, let us recall the main purpose of immunodepressive drugs.The main purpose of these drugs is to decrease the immune reaction. This is very important, e.g., in organ transplant. Indeed, otherwise, the immune system will attack and destroy the implanted organ.

3 But why is there an immune reaction in the first place?

But why is there an immune reaction in the first place? In general:

- if a genetically alien material appears inside the body,
- this is an indication that someone from outside the organism is trying to take control – or at least to parasite.

This could be a virus or a bacteria, this could be a tapeworm.

Naturally, all such alien bio-matter appearances are perceived as danger. Because of this potential danger, a natural reaction is to attack and destroy the alien bio-material.

4 Immune reaction is usually multi-level

There are many ways for a body to fight, on all levels; for example:

- On the level of cells, individual cells attack invader cells.
- On the level of organism as a whole, the body temperature increases, making all the possible fighting cells more active.

Usually, all these levels are involved at the same time.

5 How immunodepressive drugs work

Immunidepressive drugs do not just affect one of the immune mechanisms. If they did that, there would be many other ways for the body to attack and destroy the life-saving implant.

Most immunodepressive drugs suppress all immune mechanisms, on all levels. This is why a person taking such drugs is vulnerable to flu or cold:

- While the drugs suppress reaction to an implant, they also suppress reaction to flu viruses.
- Thus, even a usually harmless – and easily defeated – virus can be dangerous to patients who take these drugs.

6 Resulting explanation

The general idea of immunodepressive drugs is to decrease the body's reaction to possibly dangerous situations. This reaction has to be decreased on all levels.

An important level is always a mental level. Thus, the person becomes less worried about possibly dangerous situations.

This naturally makes a person more optimistic – thus, happier. This explains the puzzling empirical phenomenon.

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