

## **A medication for unrelated disorders: what does it inform us?**

*By Kunjumon Vadakkan, dated 30<sup>th</sup> August 2022*

For the first time, a large city got a neurologist, and the community felt happy about it. Everything was going well for the first three years, until something unusual happened. Sunday being a holiday, pharmacies in the city were taking turns to open on that day. On a particular Sunday, the pharmacist on duty had some unexpected personal issue that prevented her from reaching the pharmacy on time. She was late by one hour. Pharmacy assistant informed patients who gathered outside the pharmacy about it. Patients waited patiently since they were left with only one option of going to a neighboring city which is fifty kilometers away.

As patients were waiting, some of them started to chat with each other about the new neurologist. As they talked about their medications, two of them noticed that the neurologist had written valproic acid for two unrelated diseases – one patient had headache and other had depression. They could not believe how it can happen like this. So, they asked other people, who were waiting, whether anyone had a prescription for the medication valproic acid. Two people raised their hands. To the astonishment of everyone, one was suffering from a seizure disorder and other hyperkinetic movement disorder. These four patients gathered and decided first to meet with an educated person in the town who they thought will be able to clear their doubts. This person had good knowledge about science and mathematics. When they met him, he told them that the probability for lack of knowledge by the neurologist, who is registered with the professional body of physicians is negligible. He also expressed his opinion that a) even though all four disorders look different, they will have a common deep underlying mechanism, which is reversed by valproic acid, b) since we don't know how the brain works, the neurologist may not be able to explain their mechanism of action accurately to provide a convincing answer, and c) once we understand how the brain works, we should be able to explain it using that mechanism.

Later, these four patients went to meet with their neurologist. The neurologist told them the same thing. The neurologist also added that scientists must be using this information as an opportunity to solve the puzzle about the inner working of the brain. They will be building hypotheses about the mechanism and testing of the accuracy of their predictions. She also explained that Mother Nature provides us many pieces of the puzzle and challenges us to discover her further.

The four patients returned to the pharmacy and got their medication. They wished they had specific medications for their specific diseases. They parted with the hope is that scientists will figure out how a single medication works to alleviate symptoms of totally unrelated disorders and soon they will be able to figure out how to develop specific medications for individual disorders.