How does Protein Affect Parkinson's Medications?

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A diagnosis of Parkinson disease is commonly associated with a prescription for dopamine replacing, enhancing, or mimicking medications to provide temporary relief from the motor symptoms. As we know, Parkinson disease results from the degeneration of dopamine producing cells in the brain. The "gold standard" of Parkinson's medications is Levodopa, sold under the brand name Sinemet, which effectively replaces the dopamine in the brain to help with daily management of motor symptoms. There are many factors that can influence the effectiveness of the Levodopa medication. However, this article will specifically focus on the relationship between Parkinson's medications and protein, often called "the Protein Effect"

Let's imagine you're going to enjoy a nice steak dinner with your loved ones or close friends. After the meal, your body will automatically begin digestion of the protein, in this case the steak, which involves the breakdown of the protein into amino acids for absorption in the digestive tract in the small intestine. The receptors within the small intestine responsible for the amino acid absorption are ALSO responsible for absorbing Levodopa for those with Parkinson disease. When oral Levodopa is ingested, it travels to the small intestine for absorption and transportation to the brain through the blood-brain barrier. Since the receptors are only able to absorb limited amounts at one time, **the protein and Levodopa medication compete for absorption**. As a result, the amount of Levodopa that enters your system may be reduced and the medication may feel less effective, may take longer to become effective, or may seem to offer a shortened window of therapeutic relief. The Levodopa medication will remain in the small intestine until the protein has been completely absorbed or the individual has a bowel movement, leading to unpredictable motor symptoms similar to off periods and difficulty with symptom management.

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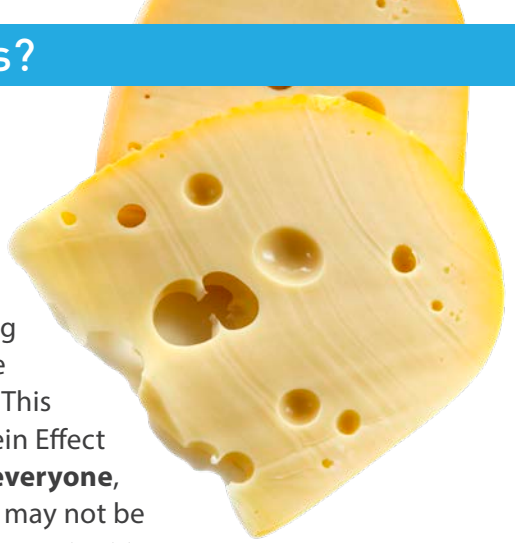

The common recommendation to resolve the issue of absorption with protein is scheduling Levodopa medications 30-60 minutes before a meal or 1-2 hours after a meal to allow your body sufficient time to digest the protein. The alternative recommendation is consuming larger portions of protein towards the end of the day, as less dopamine may be required in the evening as we prepare our bodies for rest or as symptom management may be less critical.

It is also recommended to drink lots of water! The benefit of drinking more water *(which we should all be doing more of anyway)* includes helping the medication move to the small intestine quickly for absorption and reducing constipation.

If you're struggling to manage the Parkinson's medication on an empty stomach due to nausea, it can often be helpful to take prescribed medication with a smaller snack (ex. saltine crackers or toast) or carbonated beverages (ex. ginger ale). It can be helpful to have smaller snacks throughout the day with small amounts of protein, such as cheese and crackers, to avoid large amounts of protein at meals. This small snacking schedule might also help with nausea from medications. For example, if your medications are scheduled for 11:00 AM, a small snack of cheese and crackers around 10:00 AM might be helpful.

As we learned from Dr. Veronica Bruno during the annual 2022 Hope Conference, the schedule of small snacks can also help with dizziness from orthostatic hypotension and gastric emptying that can improve with medication absorption.

It is important to note that due to the diversity in Parkinson's symptoms and progression, the Protein Effect may influence each person differently and during different times of the Parkinson's journey. This means that the Protein Effect will **not happen to everyone**, and dietary changes may not be necessary. It is also important to maintain a healthy protein consumption according to the Canada Food Guide to avoid creating additional health concerns from low levels of protein or iron. This means **you should not cut protein out of your diet completely** but work towards modifying how or when the protein is consumed. Seek support from your healthcare team, including neurologist and nutritionist/dietitian, to determine the correct medication schedule and diet for your unique Parkinson's.

Listing of sources of protein:

- Meat, fish, poultry, eggs
- Dairy products (cheese, yogurt, and butter)
- Dairy supplements (Ensure, Boost, whey, protein powders and milk alternative beverages)
- Plant-based products (beans, lentils, quinoa, soybeans, seeds)
- Nuts and nut spreads (peanut butter)