



## Levodopa-benserazide Interaction with Enteral Nutrition: A Case Report

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### ABSTRACT

Levodopa is considered one of the most important medication for Parkinson symptoms control, it also first line agent for elderly and patients who symptoms don't control with other agents. However, it has several drug and nutrition interactions. A few case of levodopa enteral nutrition has been reported.

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### Introduction

Caused by neurodegeneration of dopamine containing neurons, Parkinson disease, commonly described as resting tremor, rigidity, bradykinesia, and postural instability. Treatment modalities have been approved for Parkinson including levodopa (with or without catechol o methyltransferase inhibitor), ergot and non-ergotamine dopamine agonists. However, Levodopa is considered as an important pharmacological agent for Parkinson disease, especially in older patients or who don't control with other agents. To maintain levodopa absorption and efficacy, it has been recommended to separate administration of levodopa with amino acids (1).

### Case description

We described a patient 67 years old patient with Parkinson disease in the intensive care unit due to loss

of consciousness and pneumonia. Before admission, patient symptoms were well controlled with levodopa benserazide 125mg (containing 100 mg levodopa and 25 mg benserazide) orally twice daily. After admission to the intensive care unit naso-gastric, nasogastric tube was fixed for nutrition support. Empiric therapy, antibiotic therapy and resuscitation were done. Nutrition service consults recommended high protein diet and healagen® (a combination of arginine and glutamine commonly used as a wound and soft tissue repairing and collagen synthesis) for patients. Two days after ICU admission, the patient's level of consciousness improved, but neck rigidity was noted.

One-week later patient's tremor and rigidity got worse. The other differential diagnoses were ruled out. Patient's levodopa benserazide 100/25 mg doses was increased to thrice daily. However, the symptoms were not well resolved. Levodopa-benserazide administration was separated from enteral nutrition; Parkinson related tremor and rigidity were improved over the next days. Over a period of 4 weeks patients' level of consciousness, pneumonia improved and discharged.

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**Table 1.** Patient medications list.

Vancomycin 1g/IV/BD	Omeprazole 20mg/PO/Daily
Meropenem 1g/IV/TDS	NAC 600mg/PO/TDS
Phosphorous 500 mg/PO/TDS	Heparin 5000 IU/SC/BD
Captopril 25mg/PO/TDS	

BD: twice daily, IV: intravenous, mg: milligram, PO: orally, SC: subcutaneous, TDS: three times daily.

## Discussion

Drug-nutrition interactions have commonly occurred in critically ill patients and may increase patients' hospital stay (1). Phenytoin, warfarin, ciprofloxacin and levothyroxine are among commonly drugs that interact with enteral feeding. Several cases reported Parkinson symptoms aggravation as enteral feeding (2-4). Our patient received high protein diet along with arginine and glutamine supplement (containing 7 mg arginine and 7 mg glutamine) that may compromise levodopa-benserazid absorption. Recently, Carmargo et al., showed that L-arginine could compete with levodopa entrance through the enterocyte membrane and lower levodopa absorption (1). Furthermore, high protein diet might increase motor fluctuation in patients with Parkinson disease (3). Other possible interactions were not of significant values. The results of presenting case showed that arginine and high protein diet might lower levodopa absorption and increase hospital stay.

To prevent Parkinson disease symptoms aggravation, until further data are available, we recommend administering levodopa containing preparation 2 hours before or after enteral nutrition.

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