

The human gut is replete with microbiota — the gut microbiome. These intestinal bacteria have a bi-directional effect on mood disorders through neurobiochemical, neuroendocrine and neuroimmune mechanisms of the gut-brain axis.<sup>4</sup> Bi-directional, in this case, means different microbiota can alter a person's mood and that a person's mood can alter the microbiota.

Examples of relationships between food consumption and well-being include eating breakfast, meals and snacks as well as consuming fruits and vegetables, particularly fruits and vegetables increased overall well-being in a dose-response fashion.<sup>3</sup> Research shows that eating breakfast regularly, consuming more meals and snacks and eating more fruits and vegetables all were associated with greater well-being.<sup>3</sup> Analyses of studies on prebiotics, probiotics and antibiotics show there is a relationship between microbiota and mood disorders. Administering prebiotics, probiotics and appropriate antibiotics can relieve depression and anxiety symptoms.<sup>4</sup> What goes on in the gut during eating, digestion and elimination has a profound effect on the whole person.

Everyone is familiar with the saying “you are what you eat.” The research presented adds a dimensional aspect to this tenet by clarifying that not only does food influence the physical body, but also the mood and quality of life.

As a clinician, there are many ways these ideas can be translated into practical suggestions to improve physical and mental health. In fact, Step 1 involves selecting foods that promote both a healthy body and healthy gut bacteria. Think about food choices, including more fruits and vegetables, clean animal products and nuts and seeds. To support the microbiome, you need to consume more prebiotic fiber, which is the type of fiber that feeds bacteria in the gut and includes common foods like bananas, dandelion greens, Jerusalem artichoke, garlic, rutabaga, cauliflower, cabbage, onions and leeks. Also, there are probiotic foods. Probiotic foods have been fermented or cultured and contain robust quantities of microorganisms. These foods include yogurt, kefir, sauerkraut, kimchee, tempeh, miso, kombucha, apple cider vinegar, buttermilk and some pickles.

Step 2 encompasses the more subtle qualities of the dining experience, which given the bi-directionality, also affect mood! How one eats is important and reaches back to mindful eating: Setting the table, dining at the table and looking out the window as opposed to scarfing down a dripping sandwich over the sink. But then again, if you

## Food and Mood

Around the holiday season, emotions can swing in all directions! How do you feel when you are with family? Excited? Happy? Satisfied? Or, do family gatherings cause you to feel down and you really do not know why?

First ask the question: How do you want to feel? Inspired? Vital? Energized? If you are interested in evidence-based interventions and do not follow positive psychology research, consider starting. Increasing positive feelings is linked to enhanced well-being, including improved immune system function<sup>1</sup> and increased telomere length.<sup>2</sup> For those unfamiliar with telomere length, it is a biomarker for aging. The longer the telomeres, the better. Recent research in positive psychology is beginning to show that consuming healthy food can enhance well-being, in a dose-response fashion.<sup>3</sup> Which means the “right” foods can positively influence your mood. When you believe you are in control of your own well-being, you have a more elevated and positive mood and are more likely to make healthier food and lifestyle choices.<sup>3</sup> What is even more interesting, the association may be bi-directional. Meaning, good food makes a good mood AND a good mood makes for better food choices!



are super hungry and the sandwich is delicious but messy, maybe scarfing over the sink is a good thing!

When you eat should also be considered. Eating when hungry, stopping when satisfied and allowing enough time to both enjoy food and company, will promote positivity. Where you eat may also make a difference. Slinking out of the family party to eat a banana secretly in your car may not make you feel good if everyone else is inside enjoying each other's company. Also consider with whom you are eating. Maybe eating with a toxic family is less desirable than the minivan's captain chair!

Human flourishing is your birthright! This two-step process will support choices that honor and promote well-being versus those that sabotage health. The next time you want to turn around your funky mood, try out the Warm Roasted Vegetable recipe on the right. It is rich with prebiotic fiber-filled vegetables and perfect to bringing both happiness and nourishment to your family feast. Enjoy! €

## References

1. Costanzo ES, Lutgendorf SK, Kohut ML, Nisly N, Rozeboom K, Spooner S. (2004). Mood and cytokine response to influenza virus in older adults. *J Gerontol A Biol Sci Med Sci*, 59 (12):1328-33.
2. Hoge, E., Chen, M., Orr, E., Metcalf, C., Fischer, L., Pollack, M., DeVivo, I. and Simon, N. (2013). Loving-Kindness Meditation practice associated with longer telomeres in women. *Brain, Behavior, and Immunity*, 32, pp.159-163.
3. Holder, M. (2019). The Contribution of Food Consumption to Well-Being. *Annals of Nutrition and Metabolism*, 74(Suppl. 2), pp.44-52.
4. Liu, L. and Zhu, G. (2018). Gut-Brain Axis and Mood Disorder. *Frontiers in Psychiatry*, 9.



Denise Pickett-Bernard, PhD, RDN, LDN, IFNCP is a functional and integrative nutritionist who has developed university and graduate level curricula in culinary nutrition and integrative and functional clinical nutrition. Considered an expert in culinary

nutrition and food-based interventions, she maintains a private practice in Roswell, GA where she helps clients reach vibrancy and flourishing using mindful food-based interventions. She leads the Culinary Collaborative with the Integrative and Functional Nutrition Academy. Her most recent endeavor is to produce a rehydration beverage [www.RevitalizePro.com](http://www.RevitalizePro.com). Having practiced as a Reiki Master for over 15 years, Energy Medicine influences all of her professional initiatives. [www.DrDeeNutrition.com](http://www.DrDeeNutrition.com)



## Warm Roasted Vegetables

By Denise Pickett-Bernard, PhD, RDN, LDN, IFMCP

Carrots	1#, chopped into ½ in pieces
Rutabaga	1 small, chopped into ½ in pieces
Cauliflower	½ head, divided into small florets
Onion	1 med, diced
Garlic	1 head, peeled and cloves left whole

EVOO	½ C
Cumin	1 T
Turmeric	2t
Salt	TT
Pepper	TT

Preheat oven to 400 degrees

Line a baking sheet with parchment paper

Prepare all the vegetables as directed. Place into a bowl. Toss with the oil. Mix the spices, salt and pepper together. Sprinkle the spices onto the oil coated vegetables. Lay flat on the baking sheet. Roast about 40-50 minutes depending upon your desired vegetable tenderness. My family prefers them soft, with caramelized edges.