



**LifeExtension®**  
Stay Healthy, Live Better

# Feeling Depressed or Anxious?

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Take this Quiz to Find Out Why!

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A photograph of two young women with long brown hair hugging each other outdoors. The woman on the right is smiling broadly, showing her teeth, and has her arms around the other woman. She is wearing a light blue tank top and a brown shoulder bag. The woman on the left is wearing a white lace-trimmed top. The background is a blurred city street scene.

# Serotonin *A Feel Good Neurotransmitter*



Feelings of wellness, contentment, and happiness come about because of many factors — loving relationships, a close family, a successful career, and good health are just a few. But the outward expression of joy and happiness has a biochemical trigger as well. And that trigger is a neurotransmitter called serotonin.

Serotonin is often dubbed a “feel good neurotransmitter” and the “happiness signal.” When your brain has high levels of serotonin you feel better and your overall outlook is better. But on the flip side, if serotonin levels are low, the opposite feelings surface. Low serotonin is associated with depression and anxiety and can even impair memory and increase aggression.<sup>1</sup>

Why do serotonin levels drop? Well, the answer is complicated, but aging itself is a reason. Aging is often accompanied by a spectrum of mood disorders that include irritability, stress, and anxiety — all signs of low serotonin.

## Here's what we suggest you do:

1. Take the “Low Brain Serotonin Test.” Answering just a few questions will help to determine if you potentially have low brain serotonin.
2. Review lifestyle suggestions for supporting healthy serotonin levels ... everyday things can influence the level of brain serotonin.
3. Learn about supplements that can actually “boost” brain serotonin levels. These natural extracts have been shown to safely increase brain serotonin levels.





# Can COLOR Affect Your Mood?

COLOR	WHERE TO USE IT?	WHY?
GREEN	Desktop home screen, electronic or paper to-do-lists.	Green will affect your productivity and is easy on the eyes.
ORANGE	At the gym or physically demanding activity.	Orange stimulates and increases oxygen supply to the brain. It can be energizing.
RED	When on a date and looking for passion.	Red is passionate. If you really want to get your date's heart pumping, go with red.
BLUE	When on a relaxing date.	Blue is stable and relaxing. It produces calm feelings.
BLACK	Wear or use sparingly. By the way, there are other colors that are slimming!	Black is aggressive and combative in informal settings. Although in formal settings, it comes off as sophisticated.
BLUE/GREEN	The walls of your office or a home reading room.	Blue/green hues increase efficiency, producing calm feelings and hopefulness.
GREY	Lazy days around the house, but never to work.	Grey is passive and uninvolved. Although commonly used in gym clothes, it actually portrays lack of energy.



## The Low Serotonin Test



Serotonin doesn't just influence mood, but can also influence satiety (fullness) following a meal. If brain serotonin is low, it diminishes a feeling of fullness and is associated with *carbohydrate binging*.

The loss of normal satiety coupled with carb binging can obviously lead to overeating and contribute to the accumulation of body fat. Interestingly, studies have shown that obese individuals have low blood tryptophan levels, the precursor to brain serotonin. This potentially links overeating with a serotonin deficiency in the brain.<sup>2,3</sup>

Low brain serotonin can produce specific symptoms, such as feeling down or blue, being anxious and irritable, and even increase sugar cravings. Of course, when we help the body replenish serotonin levels, many of these symptoms diminish and may even completely resolve.

We've developed a short, simple quiz based on the symptoms of low serotonin. All you do is answer yes or no — as in "Yes, I have the symptom" or "No, I don't have the symptom." Add the number of "yes" answers. The higher the number, the greater the risk of having low brain serotonin.

Let's take the quiz and see if you might have low brain serotonin. By the way, it's probably a good idea to take the test when you're relaxed, on a good day.

#### Questions to Determine Your Level of Brain Serotonin

	YES	NO
Have you been diagnosed with depression?		
Have you been diagnosed with anxiety?		
Do you feel "blue" and down more days than not — but haven't been diagnosed with depression?		
Are you more irritable than you used to be?		
Has your outlook on life — your relationships, your career, your future — changed for the worse and become bleak?		
Are you becoming aggressive or angry as you get older?		
Do you crave sweets when under stress and/or in the afternoon?		
Is your sleep restless, with waking up many times throughout the night or not feeling rested after waking up?		
Would you describe your energy level as low?		
Do you eat to feel better?		



## IF YOU ANSWERED WITH ...

**0 Yes** — Normal brain serotonin

**1–2 Yes** — On the verge of low serotonin

**3–4 Yes** — Mild serotonin deficiency

**5–6 Yes** — Moderate serotonin deficiency

**7 or more Yes** — Severe serotonin deficiency

*Disclaimer: Low serotonin isn't the only cause of the symptoms described. Based on the answers there is the potential for mild, moderate, or marked serotonin deficiency.*



### Life Extension Health Advisors are Standing By.

If you answered yes to 7 or more questions, talking with someone about your symptoms is probably a good idea. Life Extension has a complete staff of health advisors that are here to help.

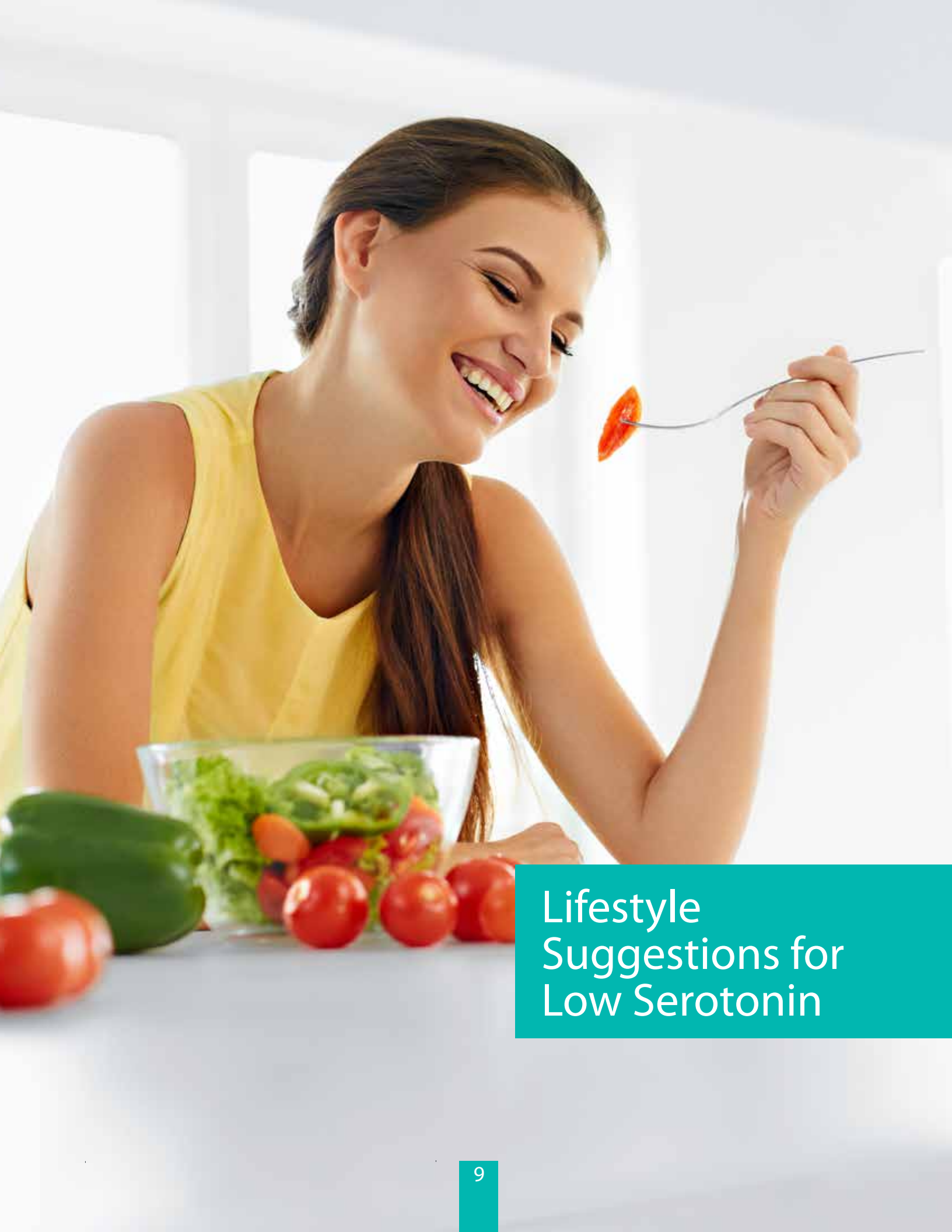
**Give them a call today at  
1-888-236-0683.**



How'd you do? Don't worry if you marked "yes" to a lot of the questions. It just means you're a normal person experiencing some symptoms of low brain serotonin. And the good news is we can help. There are lifestyle and supplement suggestions that have helped many people just like you.

So let's take a look at how we can boost and maintain healthy brain serotonin levels.





Lifestyle  
Suggestions for  
Low Serotonin



If your symptoms center on carb binging, then consider these:

- Replace sugary snacks with high-protein alternatives. Nuts, seeds, and cheeses are healthy choices.
- If you feel hungry, try drinking water. The water fills your stomach and often can diminish hunger. Chewing gum and brushing your teeth can also help to manage sugar cravings.
- When you feel stressed and want something sweet, take a walk instead. Simply by moving, you can “de-stress” and eliminate the desire for sugar.

It doesn't really matter how you scored on the quiz when it comes to a lifestyle that supports a healthy, stable mood. These are things we all can do.

## Minute Fixes to a Better Day



### 1-Minute Fixes

- Smile at someone in line, at a stop light, or in the chair next to you.
- Get up from your office chair and do a deep stretch.
- Inhaling the scent of orange or lavender can reduce anxiety.
- Eat a piece of Chocolate. Yummy!



### 5-Minute Fixes

- Be thankful for all the good in your life.
- Snuggle up with a blanket — putting in dryer first is a bonus.
- Do something nice for somebody else.
- Sing out loud to a song.
- Hug your significant other or a friend.
- Hang out with a pet.
- Laugh and enjoy small miracles around you.



### 10-Minute Fixes

- Call a friend you haven't spoken to in a while.
- Become clutter free. Organize one drawer at a time.
- Boost your mood with a small snack (peanut butter on an apple).
- Look at happy pictures.
- Sit outside in the sun for a short break.
- Do some yoga or go for a quick walk.





Food can influence mood. Most of us can relate to that, right? Below are foods to eat — GREEN LIGHT — and foods to avoid — RED LIGHT — for promoting a good mood.

● **Want to Boost Your Mood?  
Try these foods**

	Reason
<b>Walnuts</b>	Contain Omega-3 Brain Nutrients
<b>Bananas</b>	Boost Serotonin
<b>Oats</b>	Eases Depression
<b>Green Leafy Foods</b>	Boost Energy
<b>Epsom Salts</b>	Have a Calming Effect
<b>Cayenne Pepper</b>	Relieves Depression
<b>Water</b>	More Energy and Less Stress
<b>Almonds</b>	Brain Food
<b>Sunflower Seeds</b>	Elevate and Regulate Mood
<b>Dark Chocolate</b>	Helps Restore Energy and Mood
<b>Eggs</b>	Omega-3 & B12
<b>Coffee</b>	Releases Factors that Regulate Mood

● **Feeling down?  
Don't eat these foods!**

	Why?
<b>Carbohydrates</b>	Ineffective for Boosting Serotonin Release
<b>Caffeine</b>	Impedes the Release of Mood-Boosting Hormones
<b>Sugar</b>	Impedes the Release of Mood-Boosting Hormones
<b>Alcohol</b>	Impedes the Release of Mood-Boosting Hormones
<b>Soda</b>	Mood Plummets after Initial Sugar High
<b>Aspartame</b>	Wreaks Havoc with Brain Function
<b>Artificial Colors</b>	Impacts Mood
<b>Gluten</b>	Affects Serotonin
<b>Processed Food</b>	Irritability and Impacts Mood

[www.Prevention.com](http://www.Prevention.com) • [www.webmd.com](http://www.webmd.com)



**BANANAS**

- High in vitamins B6, A, and C.
- High in fiber, potassium, iron, and protein.
- Help convert tryptophan into serotonin.



**WALNUTS**

- Provide vitamin B6 and tryptophan which help produce serotonin.
- Natural antidepressant.



**DARK CHOCOLATE**

- The fat, sugar, caffeine, and theobromine (found naturally in chocolate) provide a quick burst of energy and a big mood lift.
- It releases endorphins and serotonin naturally.

Here's some information about specific, mood boosting food choices:



The image is a composite. On the left, a clear glass is filled with sliced vegetables: red tomatoes, orange carrots, green cucumbers, and green grapes. A bunch of fresh green herbs is behind the glass. On the right, another clear glass is filled with various pills and capsules. The top half of the glass contains yellow capsules, and the bottom half contains white and red capsules. In the background, a blister pack of red capsules is visible. The entire scene is set on a light-colored wooden surface.

## Nutrient Suggestions for Low Serotonin



Besides food and lifestyle choices, specific supplements can also help to either boost serotonin production or prevent its break-down. Tryptophan and 5-HTP (5-Hydroxytryptophan) are the precursors to serotonin, so supplementing with them naturally boosts serotonin production.

However, serotonin is metabolized quickly into different compounds. Not only do you want to increase serotonin production, but you also need to protect it and keep its brain levels high. This can be accomplished with saffron extract.

As a matter of fact, a recent study showed that saffron extract may be useful as an add-on therapy for people with a major depressive disorder.<sup>4</sup>

Let's take a look at how you scored on the low serotonin test. Use the table below to see which nutrients might help in supporting healthier brain serotonin levels.

#### IF YOU ANSWERED WITH ... THEN TRY ...

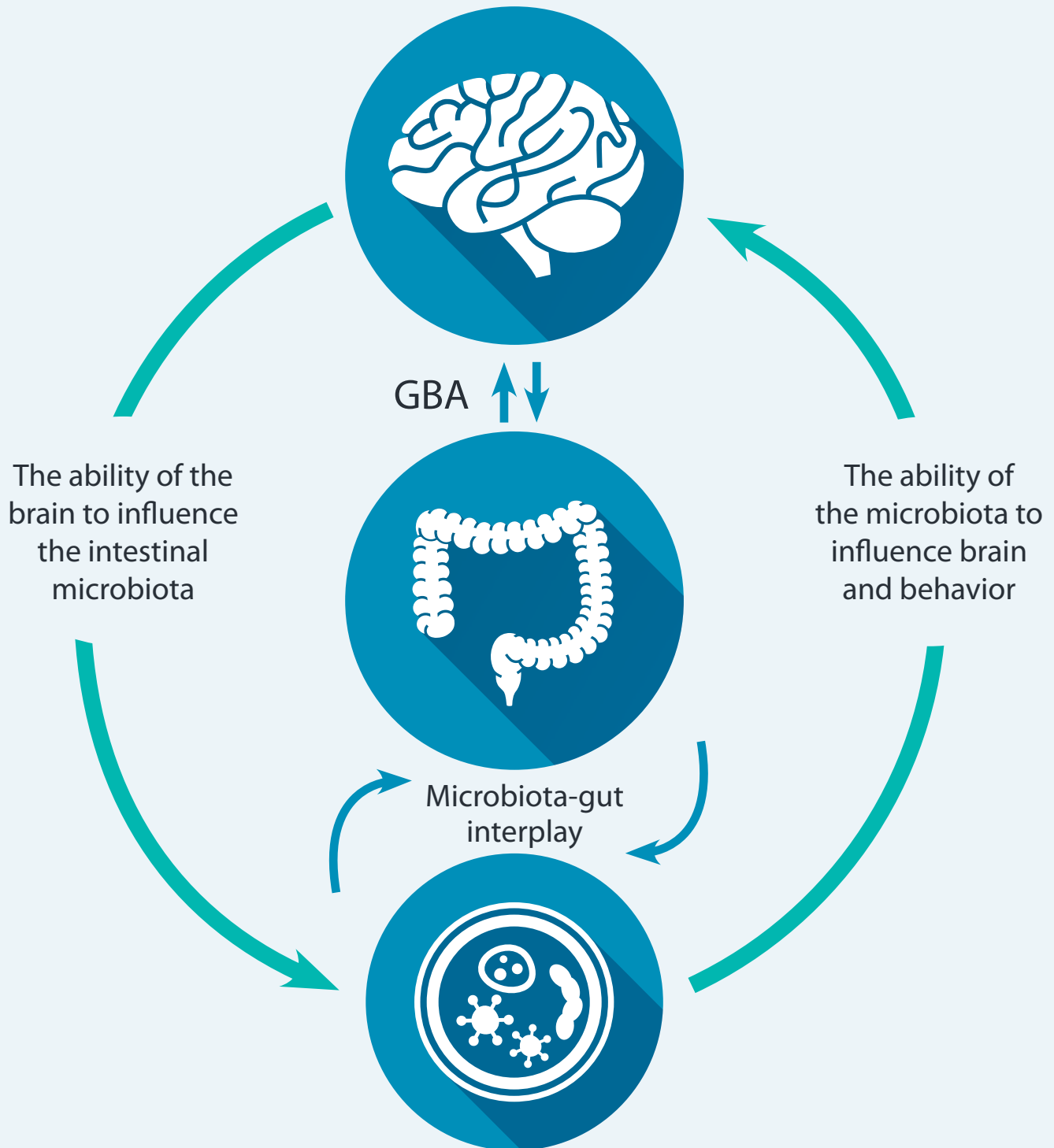
0 Yes — Normal brain serotonin	Lifestyle suggestions
1–2 Yes — On the verge of low serotonin	Lifestyle suggestions + Vitamin D3
3–4 Yes — Mild serotonin deficiency	Lifestyle suggestions + Vitamin D3 + Omega-3
5–6 Yes — Moderate serotonin deficiency	Lifestyle suggestions + Vitamin D3 + Omega-3 + Tryptophan
7 or more Yes — Severe serotonin deficiency	Lifestyle suggestions + Vitamin D3 + Omega-3 + Tryptophan + Saffron extract

Interestingly, two foundational supplements, vitamin D and omega-3 fats, have been shown to support serotonin levels as well. In this two-part study, scientists from California sought to determine the role of omega-3s and vitamin D on serotonin synthesis. Here is a summary of their results:<sup>5</sup>

- Omega-3 fat helps the release of serotonin from neurons by decreasing inflammation (inflammation blocks the release of serotonin).
- Omega-3 fat increases the fluidity of brain cell membranes, allowing serotonin to reach receptors more easily.
- Vitamin D regulates the conversion of tryptophan into serotonin.

# DID YOU KNOW THERE'S A NEW WAY TO IMPROVE MOOD?

## Gut-brain axis





Scientists are starting to take notice of the influence that the GI microbiota has on many different aspects of health beyond the gastrointestinal system, including supporting emotional well-being, promoting relaxation, and positively influencing mood.

What would you think if we told you that good, healthy bacteria in your digestive tract can help improve mood? It sounds weird, but it's true. Researchers have identified an important connection between the digestive system and the brain ... it's called the "Gut-Brain Axis."

Healthy gut bacteria — often referred to as the microbiome — play a critical role in preserving the integrity of the axis or connection. Imbalances in the microbiome can negatively affect the gut-brain axis, resulting in mood issues like depression and anxiety. However, restoring microbiome balance using specific probiotic bacteria has been shown to improve mood.

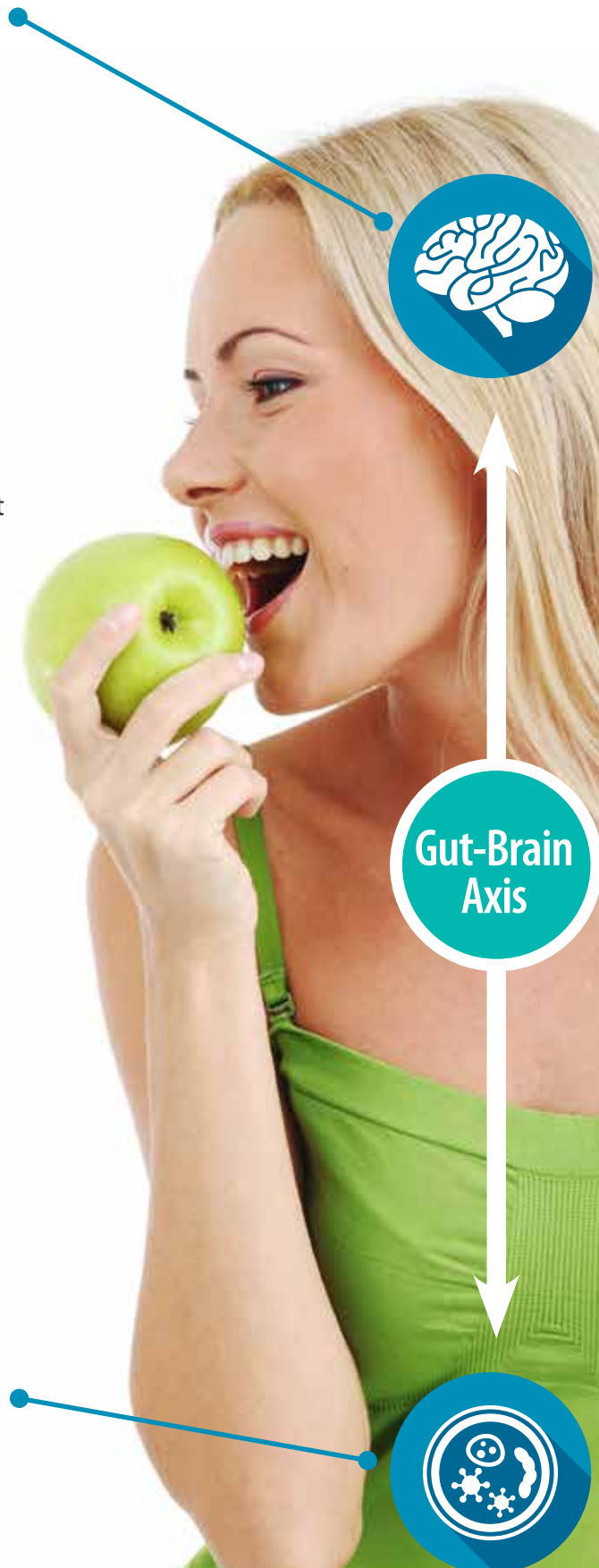
The exact way this works, no one knows for sure. One theory says that restoring microbiome balance helps to reduce brain inflammation and improve production of important brain hormones. The result is improvements in mood and better responses to stress.

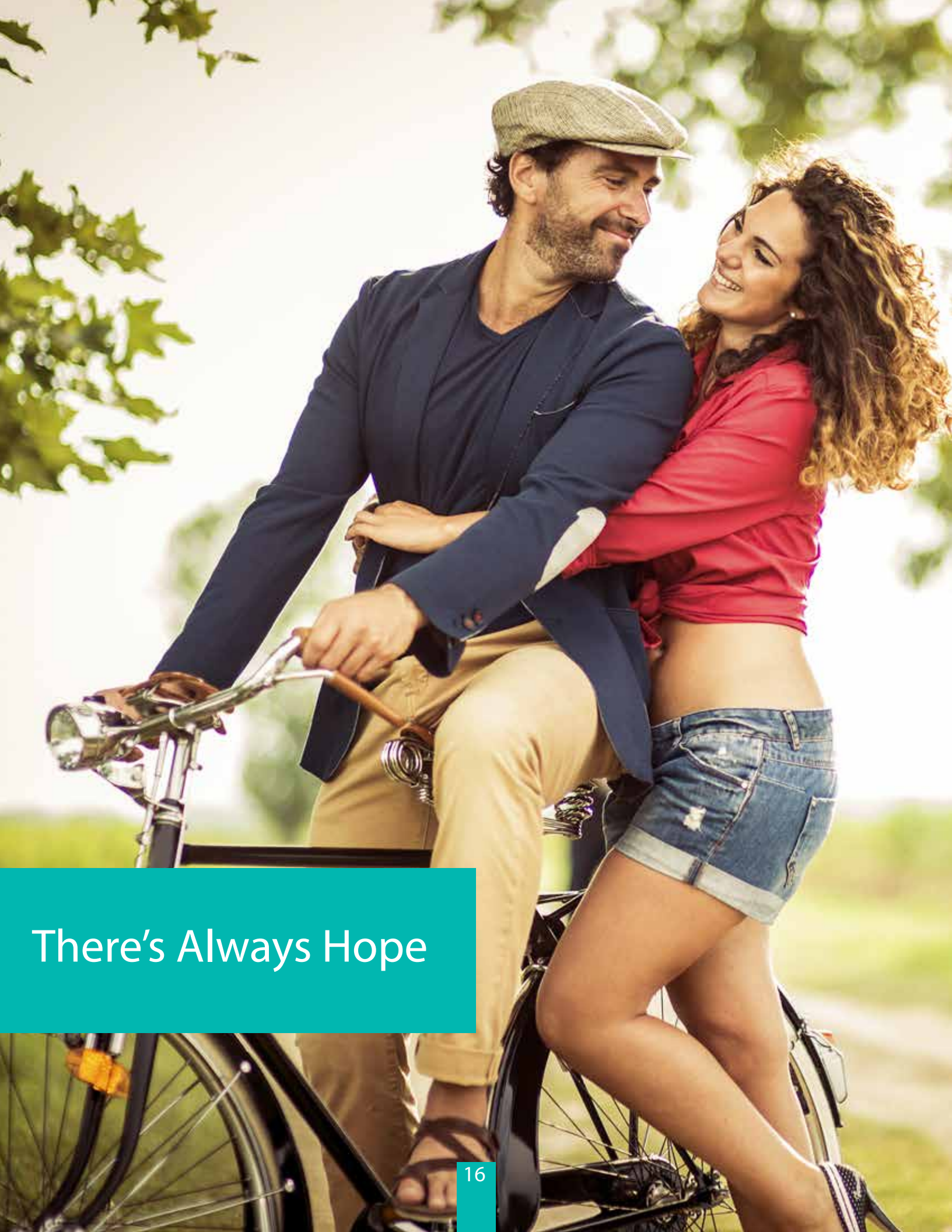
Using the two strains of probiotics may or may not influence serotonin levels, but the clinical studies are clear: Improving the health of your digestive system with *Lactobacillus helveticus* and *Bifidobacterium longum*, does in fact, improve mood!<sup>6,7</sup>

This is an amazing new line of research that Life Extension is definitely interested in pursuing. If you'd like to learn more about mood-boosting probiotics, give one of our health advisors a call. They are available at 1-888-236-0683.

#### MICROBIOTA

*Lactobacillus helveticus* (R0052) and *Bifidobacterium longum* (R0175) Two key probiotic strains that have been shown to have beneficial effects on our brains and behaviors.



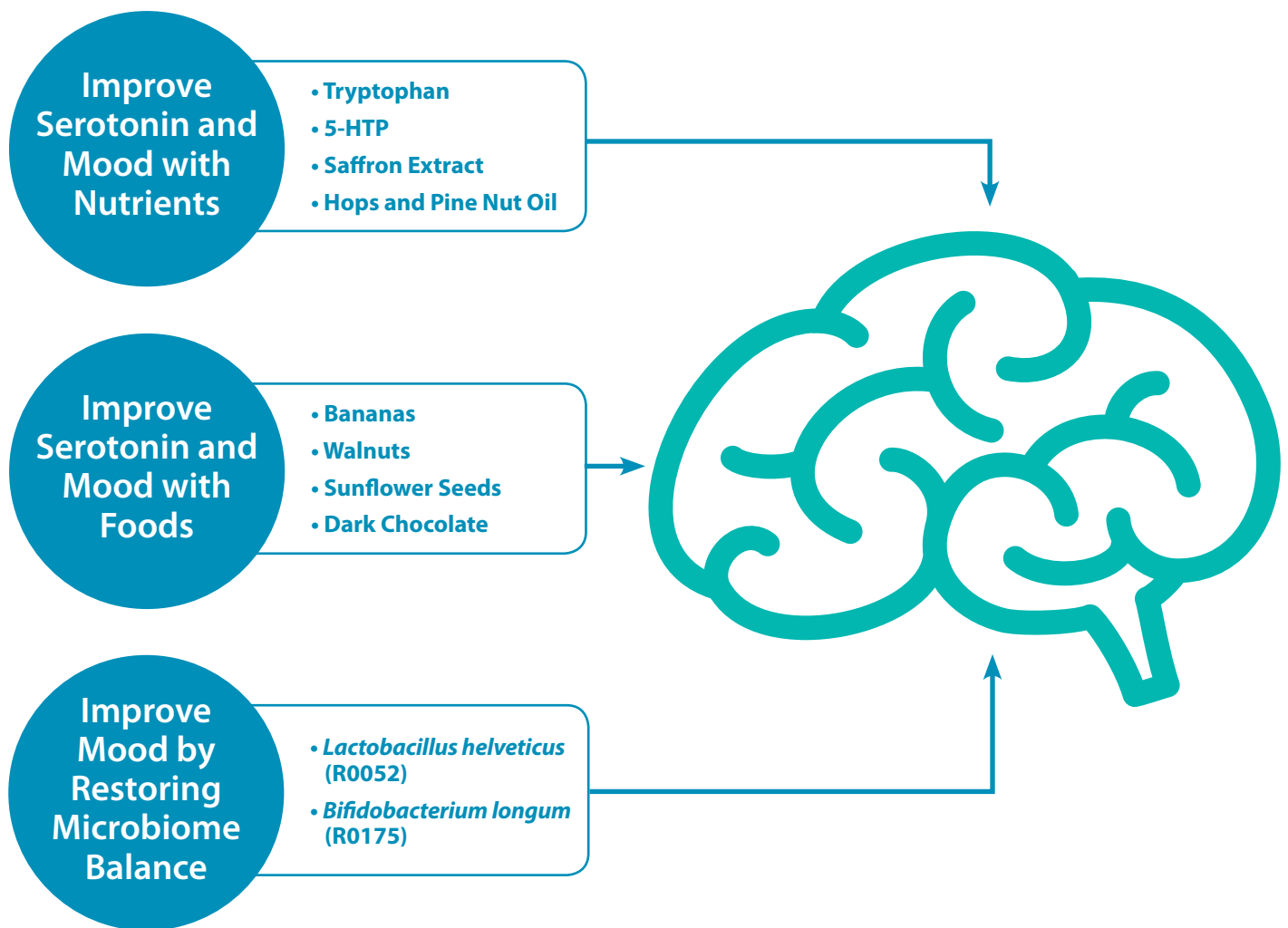


There's Always Hope



There is hope if you're feeling depressed or anxious. Give some of our lifestyle and nutrient suggestions a chance. You'll probably have to try a few of them before finding the right combination that works best for you.

Focus on improving brain serotonin levels and restoring microbiome balance with specific probiotics — *Lactobacillus helveticus* (R0052) and *Bifidobacterium longum* (R0175). This combination approach will give you the best chance of feeling better.



And remember ...You are NEVER alone!  
Life Extension health advisors are here to help!  
Give them a call today at 1-888-236-0683.



# Appendix of Nutrients

## Omega-3 Fats

Healthy polyunsaturated fats known to ease inflammation, support brain, heart, and immune health.

**Average dose:** 1,000 to 4,000 mg/day.

## Probiotics

*Lactobacillus helveticus* (R0052)

*Bifidobacteria longum* (R0175)

Healthy gut bacteria that promote optimal digestion, immunity, and mood.

**Average dose:** Varies. Best to supplement with a variety of strains.

## Saffron Extract

A spice that helps support a healthy weight by decreasing sugar cravings and between-meal snacking. It also improves mood by supporting brain serotonin levels.

**Average dose:** 176.5 mg/day in two divided doses.

## Tryptophan

An amino acid precursor to serotonin, the “feel good” neurotransmitter. It improves sleep, enhances mood, and modulates stress.

**Average dose:** 1,000 mg/day.

## Vitamin D3

A pro-hormone that influences almost every type of cell and tissue in the human body. Optimal levels help support a strong immune system, healthy bones, and mood.

**Average dose:** 1,000 to 5,000 IU/day.

## References

1. *Br J Psychiatry*. 2001 May;178:399-405.
2. *Am J Clin Nutr*. 2003 May;77(5):1112-8.
3. *Curr Drug Metab*. 2007 Apr;8(3):289-95.
4. *J Affect Disord*. 2015 Mar 15;174:51-6.
5. *FASEB J*. 2015 Jun;29(6):2207-22.
6. *Gut Microbes*. 2011 Jul-Aug;2(4):256-61.
7. *Br J Nutr*. 2011 Mar;105(5):755-64.

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