

# The Allure of the “Magic Pill”

## What Science Says About Dietary Supplements to Help Tinnitus



By Cláudia Barros Coelho, MD, PhD

**Dietary supplements appeal to** patients who want a “magic pill” for tinnitus. Playing into that desire is an abundance of advertisements on the internet, on television, and in magazines offering a quick fix for tinnitus. The pills are typically low-cost, over-the-counter drugs that are purported to have remarkable benefits, according to their manufacturers. The fact that they are often labeled “natural” plays into the notion that they are safe and effective, which isn’t always the case.<sup>1,2</sup>

### What Exactly is a Dietary Supplement?

It’s a pill containing an ingredient intended to *supplement* the diet. Ingredients might include vitamins, minerals, herbs or other botanicals, amino acids, and substances such as enzymes. The National Institutes of Health estimates that approximately 40 percent of Americans – many tinnitus patients among them – take some form of dietary supplement.

In a recent online survey of 1,788 people with tinnitus from 53 countries, 23 percent of participants reported using dietary supplements, such as vitamins, herbs, minerals, homeopathic compounds, and Chinese

phytotherapeutics, to treat tinnitus.<sup>3</sup> Fifty-two substances were described, with the most common being Ginkgo biloba (26.6%), lipoflavonoid (12.9%), vitamin B<sub>12</sub> (8.6%), zinc (8.6%), magnesium (6.6%), and melatonin (4.6%). Only 19.1 percent of all treatments were recommended by a physician. The internet was the source most frequently used for purchasing the supplements (40%).

The supplements were considered ineffective for tinnitus by 70.7 percent of subjects. Improvement in tinnitus was reported by 19.0 percent of patients, with 10.3 percent responding that a supplement had negative effects

(worsened tinnitus). The survey results confirm the lack of efficacy of dietary supplements for tinnitus and correlate with findings of previous studies.<sup>4</sup>

The U.S. Food and Drug Administration (FDA) has not approved any dietary supplements for tinnitus treatment, even though some studies have suggested benefit for a subgroup of tinnitus patients.<sup>8</sup> Perhaps a specific subgroup might benefit from taking dietary supplements, but, to date, only a limited number of well-designed investigations have tested the efficacy of dietary supplements for tinnitus.<sup>9,10</sup>

The different results shown in available studies are probably

### Concerns About Dietary Supplements and Self-Medication

- Do not self-medicate. Before taking a dietary supplement, talk to your healthcare provider. Dietary supplements are regulated by the U.S. Food and Drug Administration, but differently and far less strictly than prescription medications.
- “Natural” does not always mean “safe.” The use of dietary supplements can cause serious adverse effects.
- Inform your doctor and dentist. Dietary supplements may interfere with medications, medical problems, dental or surgical procedures, pregnancy, and breast feeding.
- Do not focus on tinnitus. Unsuccessful attempts to reduce or eliminate tinnitus can create unrealistic expectations and increase focus on tinnitus, making the condition difficult to accept and manage.<sup>5,6,7</sup>

## 'Natural' does not always mean 'safe.'

attributable to differences in methodology, forms of presentation, dosage, and purity of the product.<sup>11, 12</sup> Despite the disparate findings, patients and physicians look to dietary supplements to ease symptoms of tinnitus and its associated distress.

### What Research Says About Dietary Supplements and Tinnitus

#### *Ginkgo biloba*

*Ginkgo biloba* in the form of EGB 761 (standard *Ginkgo biloba* leaf extract containing 24% of glycoside flavonoids and 6% of terpene lactones) is the most widely prescribed dietary supplement as a treatment for peripheral vascular disease (insufficient blood flow to the limbs because of damage to blood vessels) and cerebral insufficiency (not enough blood reaching the brain) that causes concentration difficulties, memory loss, dizziness, and tinnitus.

Ginkgo is also the most studied dietary supplement in tinnitus treatment. It is believed to improve tinnitus by increasing inner ear and cerebral blood circulation and by protecting against free radicals. Several clinical trials have been performed on tinnitus patients, but the results are conflicting, with some showing positive effects and others showing no effect.<sup>13,14</sup> People with seizures (as in epilepsy) or bleeding disorders should not use ginkgo.

#### Zinc

Zinc is an element present in all organs, tissues, fluids, and secretions of the body and is essential for

stabilizing the internal environment of the body. In the auditory pathway, zinc plays a critical role in several aspects of cochlear and neuronal function. Changes in zinc absorption or excretion or an increase in body requirements can result in zinc deficiency. This is particularly common among the elderly, vegetarians, and alcoholics. Clinical manifestations include diarrhea, hair loss, muscle wasting, depression, irritability, and a rash on the extremities, face, and perineum. Zinc deficiency has also been related to tinnitus.<sup>15</sup>

A few studies have evaluated zinc supplements for treating patients with tinnitus. Zinc was no more effective in the treatment of tinnitus than placebo in a group of elderly patients in a randomized double-blind placebo control study. However, a subgroup of subjects with zinc deficiency might have derived some benefit.<sup>16, 17</sup>

Zinc supplements are generally well tolerated, with the most common side effects limited to poor digestion, abdominal pain, and nausea.

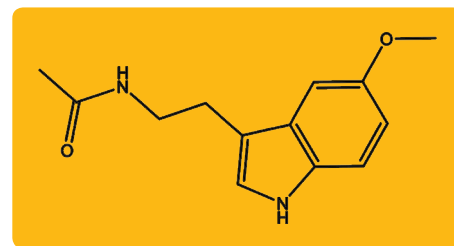
#### Vitamin B<sub>12</sub>

Vitamin B<sub>12</sub> is an essential vitamin for the body that affects neurologic and circulatory functions. Vitamin B<sub>12</sub> deficiency might impair the vascular and nervous systems of the auditory system and has been implicated in hearing loss and tinnitus. Vitamin B<sub>12</sub> deficiency is caused by dietary deficiencies or poor absorption. Because vitamin B<sub>12</sub> cannot be synthesized by the body, a dietary source, such as fish, meat, poultry, eggs, and milk and other dairy products, is critical.

Preliminary testing of vitamin B<sub>12</sub> to treat tinnitus suggests that it could improve tinnitus.<sup>18-20</sup> Vitamin B<sub>12</sub> supplements are usually well tolerated, with mild side effects including diarrhea, skin rashes, and headaches.

#### Melatonin

Melatonin is a hormone produced by the pineal gland and in different cells and tissues of the body, including the cochlea. Among its properties, it helps facilitate sleep, protects against damaging free radicals and ototoxic drugs, and has antioxidant effects. It has been used in the treatment of sleep disorders. A review of studies of melatonin in tinnitus treatment concluded that it could have a positive effect on sleep problems caused by tinnitus.<sup>21</sup> Melatonin appears to be safe when used short term, but it is yet unknown whether extended use is safe. Side effects are uncommon but can include drowsiness, headache, dizziness, or nausea.



#### Flavonoids

Flavonoids are a diverse group of phytonutrients (plant chemicals) found in almost all plant foods. Flavonoids represent a large class of at least 6,000 phenolic compounds that appear in fruits, vegetables, herbs, cocoa, chocolate, tea, soy, red wine, and other edible plants and beverages. Flavonoids exhibit

protective effects on cardiovascular and neurologic functions and are credited with reducing inflammation and incidence of cancer.

Epidemiological studies suggest that lower consumption of flavonoid-rich diets is associated with the development of many age-related diseases, including cancer, cardiovascular disease, diabetes, osteoporosis, and neurodegenerative disorders.<sup>22</sup>

Lipoflavonoid, a compound of vitamins and flavonoids, is widely advertised on the internet and in magazines as a tinnitus treatment. Only one clinical trial has evaluated the use of Lipoflavonoid Plus® alone or in association with manganese. Neither supplement was shown to be effective in reducing tinnitus.<sup>23</sup>

## Magnesium

Magnesium is an essential element that plays a key role in many body functions, including in the auditory pathway. Research studies show decreased serum magnesium levels to be associated with tinnitus, implicating magnesium in the pathophysiology of subjective tinnitus.<sup>24</sup>

Some preliminary study results demonstrated that magnesium supplements likely benefit ear functions and suggested it might have a beneficial effect on tinnitus perception.<sup>25, 26</sup>

## No “Magic Pill”

The research is clear in showing that dietary supplements are ineffective

for reducing the perception of tinnitus, which is why the American Academy of Otolaryngology–Head and Neck Surgery Foundation's *Clinical Practice Guideline: Tinnitus* states that clinicians should *not* recommend *Ginkgo biloba*, melatonin, zinc, or other dietary supplements for treating patients with persistent bothersome tinnitus.<sup>27</sup> While it is understandable that people bothered by tinnitus would try supplements, thinking they might fall into that subcategory of patients who sometimes find relief, it's important to consider the risks of adverse effects, as well as to acknowledge that the ingredients may not be safe. If you're determined to try them despite that, then you should have blood work done to determine if you have vitamin and mineral deficiencies, and discuss with your

physician which supplements would be appropriate based on those results. 🌈

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## Useful Links

- Office of Dietary Supplements (ODS), National Institutes of Health (NIH): Resources on dietary supplements publications [www.ods.od.nih.gov](http://www.ods.od.nih.gov)
- The Dietary Supplement Label Database (DSLDB): Includes full label information on dietary supplements marketed in the United States [www.dslbd.nlm.nih.gov/dslbd](http://www.dslbd.nlm.nih.gov/dslbd)
- The Safety Reporting Portal: Allows visitors to report suspected safety issues with dietary supplements to the U.S. Food and Drug Administration and the National Institutes of Health [www.safetyreporting.hhs.gov](http://www.safetyreporting.hhs.gov)

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- 4 Ibid.
- 5 Ibid.
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# Questions to Ask Your Doctor About Medicines & Dietary Supplements

- Can I use a generic form?
- When should I start to feel differently? When should I report back to the doctor?
- Will this take the place of anything else I am using?
- Are there any special directions for using this?
- Should I avoid any other medicines, dietary supplements, or treatments while using this?
- Should I avoid any drinks, foods, other substances, or activities while using this?
- What are the possible side effects from this? Is there anything I should watch for? What do I do if I get a side effect?
- Will I need any tests (blood tests, x-rays, other) to make sure it is working as it should? When? How will I get the results?
- What should I do if I miss a dose? What do I do if I use too much?
- Where and how can I get more written information about this?



As suggested by the U.S. Food & Drug Administration (FDA). For more information, see [www.fda.gov](http://www.fda.gov).

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- 23 Rojas-Roncancio, E., Tyler, R., Jun, H.-J., Wang, T.-C., Ji, H., Coelho, C., Gantz, B. (2016). Manganese and Lipoflavonoid Plus to treat tinnitus: A randomized controlled trial. *Journal of the American Academy of Audiology*. doi:10.3766/jaaa.15106
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- 27 Tunkel et al., 2014.