

Postum Making a Comeback | BY ALITA BYRD



Peter Hwang is senior vice president of Eliza's Quest Foods.

IMAGE SOURCE: POSTUM

Postum, once a popular coffee substitute in many Adventist homes, was discontinued more than a decade ago. A new company was formed to bring it back, and a full-page ad will appear next month in the Adventist Review as senior vice president Peter Hwang works to regain the Adventist market.

Question: Postum, the roasted-grain beverage once popular as a coffee substitute, was discontinued in 2007. But it was reintroduced five years ago, and you are working to get the word out to more potential Postum drinkers. Please tell us a little bit about the history of Postum and how it came back to the market.

Answer: The history of Postum dates back over 120 years. It was the first product of the Postum Company that was started back in 1895 by C. W. Post.

This company went on to become the Postum Cereal Company, which eventually grew to be General Foods.

It merged with Kraft Foods, becoming Kraft General Foods. It eventually merged with Heinz and became known as Kraft Heinz.

The Post Cereal division was sold to RalCorp. This is when some products were dissolved. They weren't sure how to position Postum. Was it a breakfast cereal? Was it to be sold in the coffee aisle?

Can you tell us more about C. W. Post? How did he come to create Postum?

C. W. Post had numerous health-related issues during his adulthood. In 1891, his wife Ella, along with their four-year-old daughter Marjorie, went to Battle Creek, Michigan, to check him into the Kellogg sanitarium to see if they could help him. He actually arrived on a stretcher. Upper-class Americans in the midwest

would go to the sanitarium to relax and live a healthy lifestyle. C. W. did not improve, and he moved into a boarding house owned by a Seventh-day Adventist in town. She taught C. W. all about healthy eating, keeping a healthy mind, and the dangers of caffeine. He was “cured,” and after he left, he started to experiment on how to create a product to replace coffee.

After numerous attempts, on January 1, 1895, he came up with what he felt was the right blend of ingredients and named the product Postum. His first attempts at trying to market it to local grocers failed. He didn't give up and aggressively began advertising it in local publications. Orders started to come in and the company grew rapidly. Not satisfied with the success of Postum, in 1897 Post invented Grape-Nuts. He gave the cereal that name because of the grape smell the product has when in the hoppers in the plant. He advertised Grape-Nuts as a wholesome way to provide a family with a good nutritious breakfast without all the work.

In 1904 he created Post Toasties, which is a corn flake. Toasties was sold for over 100 years in the southern and western states, but the plant could not keep up with production of Honey Bunches of Oats (which uses Toasties flakes), so the company stopped making Toasties as a stand-alone product. Now Toasties are just made in-house to be used in Honey Bunches of Oats.

C. W. was most happy when inventing things. It kept his brain active. His passion was to create and sell products that were not only tasty but also healthy and nutritious for everyone to enjoy.

At its most popular, how much Postum was being sold? And was that during World War II when coffee was harder to obtain?

In 1949, Postum sales reached \$500 million. By 1956, Postum was sold in 71 countries.

Do you know what the sales of Postum was at the time it was discontinued?

Around \$14 million per year.

And what are sales like now?

We did a little over \$750,000 last year and are on track to do close to \$1 million this year. Hopefully, we are just getting started.

The Postum name and the secret recipe are now owned by Eliza's Quest Food. What else does Eliza's sell? How did Eliza's come to acquire Postum?

Eliza's Quest Foods only manufactures and sells Postum. It acquired the trade secret and trademark from a small company that convinced Kraft to release them after years of protests from Postum lovers when the product was discontinued.

Eliza's Quest Foods was started by June and Dayle Rust who were teachers in North Carolina. They noticed blogs and petitions asking Kraft to bring Postum back and were surprised that hundreds of thousands of Postum customers were just as disappointed as they were that it was taken off the market. Research and development actually began in their home kitchen before they officially acquired the trade secret.

How many employees does Eliza's have?

Five in-house employees. We outsource most of our services, including manufacturing, for the time being.

How much Postum are people buying now? Is the Original flavor the most popular, or is it the newer cocoa or coffee-flavored versions?

Our sales have increased each year by 20 percent. The Original Flavor is still the most popular, but the Coffee Flavor and Cocoa Blend products are starting to grow. Many of our loyal customers enjoy mixing their Postum with cocoa to drink as a warm beverage or enjoy it as a cold, blended drink to have during the summer months.

Original Postum accounts for roughly 60 percent of sales while the Coffee Flavor is around 25 percent of sales, and Postum Cocoa Blend is 15 percent of sales.

Who are Postum drinkers? Who is your market? People who don't believe in caffeine? Who can't tolerate caffeine? I believe Mormons and Adventists (both of whom traditionally didn't drink coffee) were previously the biggest consumers?

Our customer base ranges from long-time devoted Postum drinkers who have fond memories of drinking Postum with their parents or grandparents to the younger generation who were introduced to Postum by family members. Postum was a staple in many homes.

Postum drinkers are people who are health conscious. A good portion of our customers are people who do not or cannot drink caffeine or who want to cut caf-



Vintage Postum Advertisement

feine from their diet. Many vegans and vegetarians do not drink coffee because the acid irritates their stomachs. Postum is pH balanced and actually soothes the stomach.

Even coffee drinkers who enjoy a non-caffeinated drink in the afternoons or evenings are choosing Postum over the other coffee-alternative products sold on the market today.

While Seventh-day Adventists and members of the Church of Jesus Christ of Latter-day Saints (Mormons) are very loyal Postum drinkers, they are not the only people who drink Postum. The largest group of customers are those who are health conscious and want a delicious beverage that contains no caffeine and does not irritate their stomachs.

How are you marketing to Adventists and Mormons?

We are very grateful for the long-term love and support we have received from the Mormons and Adventists. The Mountain West has been our largest market for the past few years due to the large LDS population in that area. We were live on Studio 5 with Brooke Walker and Good Things, Utah, two popular morning shows in Salt Lake City, Utah.

We currently have six Adventist distributors throughout the US that distribute our products to the local Adventist businesses, including ABC Stores, Village Market, Loma Linda Market, and other local health food stores. We have a full-page ad coming out in the May and June 2018 issues of the *Adventist Review*, plus 100,000 web impressions. We continually work very closely with the Adventist distributors in offering promotions to pass along to customers, such as regional camp meeting specials and other quarterly specials throughout the year.

Coffee has continued to rise in popularity—does this actually benefit Postum?

Just like coffee will always be around, there will always be a market for Postum. Many customers want a hot or cold coffee alternative product. Postum was and always will be considered a healthy beverage and will be sought after by those seeking to reduce caffeine intake or remove it completely from their diet. Postum is the Original Coffee Substitute since 1895, and unlike other substitutes, our product does not contain barley or chicory. It has a smoother taste that is created from roasted wheat, bran, and molasses.

What other products are in development? Will you make a version of Postum that people can make in their Nespresso machines or other fancy coffee makers?

We currently have the 8 oz. retail jars, 42 oz. wholesale/food service jars, and a 5 g single-serving packet that comes fifty per pack. We have tossed around the idea of a Keurig Cup possibly for the future.

Where is Postum being manufactured? How has the original recipe or method of making it changed?

Postum is manufactured in Indiana in a modern facility that still has access to similar equipment that was used in the original Postum plant. The trade secret is still used. The only change is that Eliza's Quest Foods took out maltodextrin from corn because this ingredient is potentially a GMO product. Maltodextrin has no flavor and only contributed to darkening the roast. It has been replaced by a non-GMO wheat starch. We feel this is a healthier option. The Postum sold today continues to have the same aroma and flavor as the original product created by C. W. Post.

Postum was known decades ago for its clever advertising campaigns. Can you describe some of your favorite ads?

The old Postum ads were priceless. We still use some of them in our current advertising because customers continue to love seeing them. Our favorite ad was an article C. W. Post ran in *Life Magazine* titled “Why Real Men Crack,” focusing on the adverse side effects of coffee consumption. Other favorites include “The Woman Who Cares.” This one shows a wife serving Postum to her husband with a scientific explanation why coffee is so bad for your health. There are many more.

What kind of advertising are you utilizing now? How are you getting the word out?

We are focusing on all forms of advertising from television lifestyle morning shows, television commercials, radio, magazines and newspapers to online impressions, online marketing, and social media such as Facebook, Twitter, and Instagram.

How did you come to work at Eliza’s Quest Foods? Are you the only Adventist employee?

I met June and Dayle Rust at a Food & Beverage Show. I was there exhibiting another product of mine, and they had a Postum booth. I remembered the brand from growing up in an Adventist home, and I had confidence I could help them grow the business and the brand by leveraging my background in the food and beverage industry over the past fifteen years. They brought me on to join the team, and I am currently the Senior Vice President of Eliza’s Quest Foods, LLC.

I have been involved in sales my entire career. I have had a strong desire to do sales for as long as I can remember. My first job out of college was for a technology services company where I was an information technology (IT) recruiter or headhunter. Though I had zero experience in technology, they saw potential in me and were willing to train me.

In the late 1990s, dot com companies were appearing everywhere. Investors were lining up to throw money at ideas. There were too many jobs and not enough talent. It was a very good time to be in IT. However, once the IT bubble started to nosedive in the early 2000s, I wanted to try something new. So I decided to go to South Korea in 2003. I leveraged my bilingual skills along with my love of sales and approached US and international manufacturers

in the food and beverage industry, and that’s when my career in international trading began. This then eventually led me to manufacturing and branding products of my own, focusing mainly on natural foods and beverages. All products that I manufacture, sell, or distribute are either non-GMO or organic.

I am currently the only Adventist at Eliza’s Quest Foods. June and Dayle are members of the Church of Jesus Christ of Latter-day Saints. They are both very good people. I am thoroughly enjoying partnering with them and playing a key role in bringing Postum back to all of our loyal customers.

What products have you manufactured and branded yourself? Are you still selling them?

I specialize in organic and non-GMO products from fruit and vegetable juice/purees, concentrates, fruit and vegetable powders, natural peanut butter/almond butter, instant breakfast “real oat” oatmeals, and natural seasonings/ingredients. I have an all-natural liquid meat tenderizer that is derived from the enzyme, found in the papaya fruit, called papain. This product helps break down the protein molecules. Most papain found on the market comes in a powder and has a very strong odor. However, our product is a liquid, and it is odorless, colorless, and tasteless.

You are head elder at the Atlanta-Korean Seventh-day Adventist Church in Duluth, Georgia. Do church members that you know drink coffee? Are they interested in Postum?

I was the head elder for the past four years at the Atlanta-Korean SDA Church. I am aware some Adventists these days are drinking coffee. However, I have been doing my best to introduce or reintroduce them to Postum. Many did not even know Postum was still available.

More and more younger people who never heard of it before are becoming interested in Postum. People wanting to reduce their caffeine intake or completely cut out caffeine are amazed at the smooth taste of Postum. Some who are sensitive to caffeine and can only drink it in the mornings can now enjoy a warm and tasty beverage in the afternoons or evenings and not have to worry about being unable to fall asleep at their normal hours. ■

See Postum.com for more information about its history and where to buy it. Photos courtesy of Postum.

Alita Byrd is interviews editor for Spectrum.

What is Vitamin B12 and Why is it Important?

| BY ROMAN PAWLAK



IMAGE SOURCE: [HTTPS://WWW.AMOILS.COM/HEALTH-BLOG/VITAMIN-B12-NEED/](https://www.amoils.com/health-blog/vitamin-b12-need/)

The science of nutrition is fascinating, practical, and progressive. As new discoveries regarding specific issues, diets, and nutrients are made, nutrition professionals gain better understanding and sometimes revise existing recommendations. Vitamin B12 is a good example. Findings made in the last few years challenged many assumptions regarding this nutrient and forced scientists to rethink important as-

pects regarding vitamin B12 needs and recommendations, and deficiency criteria, prevention, and treatment. The information in this article highlights a few of these new discoveries.

Vitamin B12, called cobalamin, is unique for more than one reason. Its chemical structure is more complex than any other vitamin. In addition, cobalamin contains a unique chemical structure that incorporates a mineral: co-

balt. Vitamin B12 is made only by microorganisms, such as bacteria. This nutrient is essential for the synthesis of nucleic acids (DNA), which means that its role is critical for growth and development, such as in pregnancy and/or childhood, for example. Vitamin B12 is also essential for the synthesis of myelin, a specific type of nerve coating. Therefore, a deficiency of vitamin B12 may result in the malfunction of both the peripheral and central nervous systems. If untreated, symptoms (which can include tremors, tingling, and feeling pins and needles) can progress to paralysis and spinal cord compression, and could potentially become irreversible. Cobalamin is also essential for the synthesis of all blood cells, including red blood cells. Thus, a deficiency of vitamin B12 may result in anemia and associated symptoms.

Vitamin B12 deficiency is common and happens mainly for three reasons: inadequate intake, malabsorption, or a specific genetic defect called MTHFR mutation. Inadequate intake is often the reason for vitamin B12 deficiency among vegetarians, especially vegans. This is because this vitamin is not naturally found in foods of plant origin. The highest risk for deficiency among vegetarians include those with special physiological needs, such as pregnant and lactating women, infants, and the elderly.

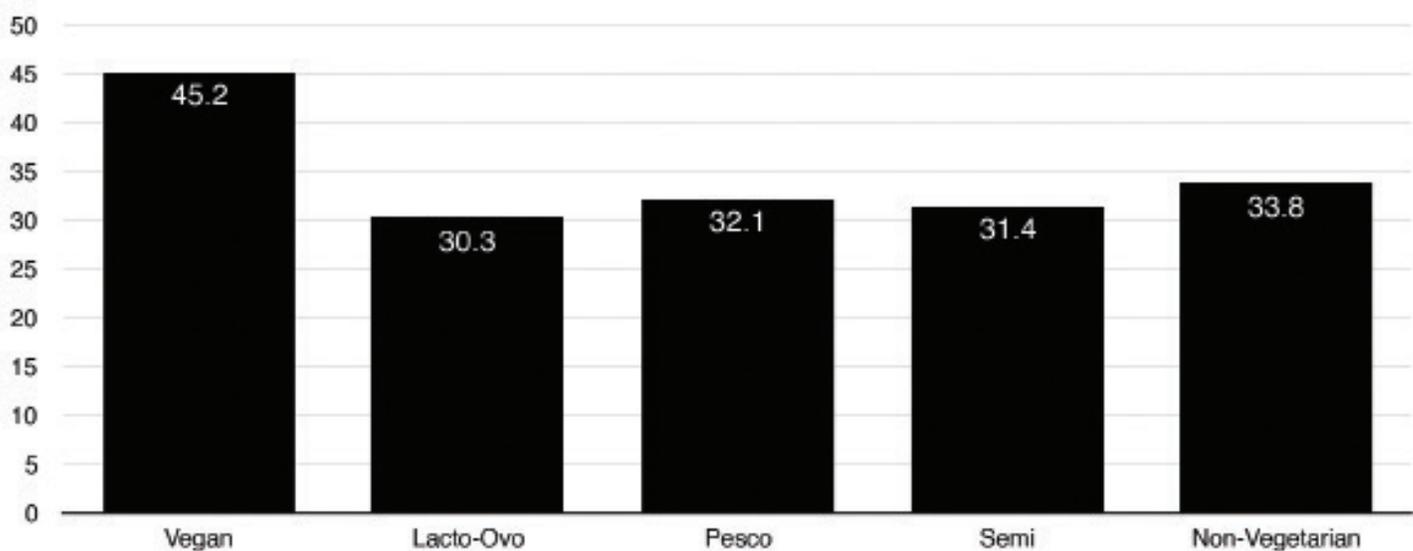
Malabsorption of vitamin B12 occurs among people

who have gastrointestinal surgery, those with health conditions affecting the GI tract (such as Celiac disease and Crohn's disease), and among people who take medication that impacts vitamin B12 absorption and status. For example, individuals taking metformin, aspirin, and/or antacids have an elevated risk of deficiency.

How common is vitamin B12 deficiency among vegetarians?

Vitamin B12 deficiency among vegetarians depends mainly on the type of vegetarian diet individuals adhere to. Vegan individuals have the highest risk and deficiency prevalence, while deficiency among vegetarians, although also wide-spread, is less prevalent. Virtually all studies that have been conducted among vegetarians show a high proportion of participating vegetarians having biochemical vitamin B12 deficiency. In fact, this nutrient deficiency is often seen in more than 50 percent of the participating individuals, and much higher prevalence—reaching over 70 percent, 80 percent and 90 percent—has been reported. The illustration below shows the prevalence of elevated homocysteine among selected individuals from the Adventist Health Study II (homocysteine is a marker of vitamin B12 status. Among vegetarians, elevated homocysteine indicates vitamin B12 deficiency).

Prevalence of Elevated Homocysteine Among Selected Participants of the Adventist Health Study II.



Adopted from Haddad E. The Vitamin B12 Story: Why is it Still a Concern? Lecture presentation during the 6th International Congress on Vegetarian Nutrition. Loma Linda University, Loma Linda, CA. February 26, 2013

Individuals with vitamin B12 deficiency often are misdiagnosed. Some of the common misdiagnoses include dementia, multiple sclerosis, diabetes-related neuropathy, rare neurodegenerative health conditions, autism, or Wilson's disease. In such cases, progression in manifestation of symptoms continues and may result in disability or death.

Symptoms of vitamin B12 deficiency can be divided into several categories including neurological, psychiatric, oral (manifestation in the oral cavity), dermatological, hematological, and rare manifestations. Selected symptoms for each of the above-mentioned categories are listed in the table below. In addition, symptoms related to fertility and pregnancy outcomes (congenital malformations) are common. They may include hypospadias, neural tube defects, spina bifida and anencephaly.

Table 1. Selected Symptoms of Vitamin B12 Deficiency

Category	Symptoms
Neurological	Deterioration of the myelin, cognitive decline (e.g. memory loss), speech impairment (slurring), difficulty walking, inability to feel the ground, tingling, difficulty concentrating, numbness in both legs, mood alteration/swings, muscle cramps, paralysis, electric shock sensations, jerking movements of abdominal muscles, anxiety, depression, clumsiness, visual impairment
Psychiatric	Disorientation, hyperactivity, decreased need for sleep, reckless and agitated behavior, social withdrawal, decreased interest, apathy, difficulty with falling asleep and concentrating, suspiciousness, hearing voices, hallucinations
Oral	Glossitis, pain and burning sensation in tongue, gradually progressive hoarseness, difficulty eating, red stains on inside of cheeks and tongue, oral epithelial dysplasia
Dermatological	Hyperpigmentation (blackish discoloration of the skin on knuckles, darkening of hands, feet, and tongue), skin lesions on feet, neck, and upper and lower limbs
Hematological	Pancytopenia (low count of all blood cell types), macrocytic anemia, hyperhomocysteinemia
Rare	Anorexia, exercise intolerance, urinary incontinence, persistent watery diarrhea

Although many people with vitamin B12 deficiency do not have overt manifestations of symptoms (for this reason, some scientists call it asymptomatic biochemical deficiency), it does not mean that symptoms are not present. Not all symptoms are manifested in a way that is detectable to individuals with a deficiency. For example, vitamin B12 deficiency is a risk factor for low bone mineral density and increased risk of bone fractures. Similarly, a deficiency is associated with hearing loss. Also, this nutrient deficiency is associated with increased risk of cardiovascular disease, especially stroke, brain atrophy and cognitive decline. Among pregnant women, a deficiency of this vitamin may cause inability to carry a live pregnancy to term.

Of most concern are cases of vitamin B12 deficiency among infants and toddlers. A number of case reports of vitamin B12-related complications among these children born to vegetarian, especially vegan, mothers and/or fed with vegetarian or vegan diets have been published. Infants and toddlers who develop vitamin B12 deficiency are often diagnosed with developmental delays and neurological damages. These children have such profound developmental delays that at age one, one and a half, or two years they may often not be able to sit up properly, eat, or even smile, and may have severe deficient weight, height, and head circumference.

Unfortunately, even mortalities among infants born to and breastfed by vegetarian and vegan women deficient in vitamin B12 have been reported.

Before more severe symptoms develop, individuals with vitamin B12 deficiency may experience mild and nonspecific symptoms. These symptoms include fatigue, irritability, feeling sleepy, inability to concentrate, feeling pins and needles in legs, tremors, and depression. Anyone with any of the above-listed symptoms should be checked for vitamin B12 deficiency. It is important to realize that vitamin B12 deficiency develops in stages. These stages include 1) inadequate intake, 2) cell vitamin B12 depletion, 3) abnormal biomarkers of vitamin B12 (e.g., low serum vitamin B12 or elevated homocysteine), 4) development of mild symptoms such as fatigue and irritability, and 5) development of severe symptoms including neurological impairments.

When overt symptoms of vitamin B12 are detected, a person may have been deficient for months or even years. Symptoms of vitamin B12 deficiency are progressive and if

12 VITAMIN B12 food sources



Source: Dr. Axe (draxe.com)

untreated, some symptoms, especially neurological manifestations, are irreversible. It is equally important to know that in many infants and children diagnosed with vitamin B12 deficiency the diagnosis was made months after the

first symptoms of deficiency were manifested (severity of symptoms progressed during this time). These facts underscore the importance of taking preventive measures (described below) to avoid developing a deficiency. The table below summarizes pediatric symptoms of vitamin B12 deficiency.

Pediatric Symptoms of Vitamin B12 Deficiency

Anthropometric	Hematologic	Other
Developmental delays/ fall in growth curves Weight < 10th percentile Height < 10th percentile Unable to sit alone Unable to walk Involuntary movements Hyperpigmentation Abnormal fine and gross motor function	Elevated MMA Elevated Hey Low or "normal" B12 Low Hg and hematocrit Pancytopenia Low or subnormal RBC Low or subnormal WBC Low or subnormal platelets	Anorexia Lethargic Lack of responses to stimuli/interaction with people Hypotonic Muscular weakness Involuntary movements Slow/abnormal EEG Delays in speech development

There are several vitamin B12 assessment techniques. They include serum or plasma B12 concentration, holotranscobalamin II, homocysteine, serum or urinary methylmalonic acid, and mean corpuscular volume (MCV). Holotranscobalamin II and methylmalonic acid are the most accurate assessment methods while serum or plasma B12 and MCV are believed to be unreliable. Unfortunately, physicians often check for either of the two least reliable measurements and often rule out vitamin B12 deficiency as a cause of symptoms based on the outcomes of these assessments. Another unfortunate practice is the range of serum vitamin B12 used as normal. Symptoms of vitamin B12 deficiency have been described among individuals with serum vitamin B12 lower than 300 pmol/L (and in some cases even with higher serum B12 values). "Normal" range of vitamin B12 is often given as one between 148 to 780 pmol/L. Also, if homocysteine concentration was assessed, a value of less than 15 µmol/L is often used a normal homocysteine concentration. However, much lower homocysteine concentrations have been associated with vitamin B12 deficiency symptoms, such as increased risk of arterial stenosis. To correctly assess vitamin B12 status, it is recommended that assessment is done using at least two different measure-

ments (e.g. serum vitamin B12 and homocysteine). The table below includes normal values for the different vitamin B12 assessment methods.

Normal Values for B12 Assessment Methods

Assessment	Normal Value
Serum B12	>4000 pmol/L (>542 pg/ml)
Homocysteine	<10 µmol/L
Holotranscobalamin II	>35 pmol/L
Methylmalanic acid	<260 nmol/L
MCV	80 - 94

Meat and animal products naturally contain vitamin B12. However, because of their detrimental effect on the risk of developing several chronic health conditions, including heart disease, cancer, diabetes, and Alzheimer's disease, it is best to avoid consuming these products. Some plant foods are fortified with vitamin B12. They include some soymilks, tofu, and some cereal products. However, it is unlikely that the amount of vitamin B12 in these products is sufficient to maintain a high enough serum vitamin B12 concentration. Thus, the most reliable way to prevent vitamin B12 deficiency among individuals at risk of vitamin B12 deficiency is to take vitamin B12 supplements. A dose of 250 µg per day is adequate for most adults. Elderly individuals should consider taking a higher dose (e.g. 500 µg). Children should be taking smaller amounts, between 5 to 25 µg, depending on age. For deficient individuals, high dose supplements or vitamin B12 injections are recommended. Physicians should be consulted in making such decisions. ■

Roman Pawlak, PhD, RD is Associate Professor of Nutrition in the Department of Nutrition Science at East Carolina University.

Footnotes:

1. F. Watanabe, "Vitamin B12 Sources and Bioavailability" *Exp Biol Med* (2007;232): 1266–1274.
2. M. J. Koury & P. Ponka, "New insight into erythropoiesis: The Roles of Folate, Vitamin B12, and Iron," *Annu Rev Nutr*, (2004;24): 105–131.
3. E. A. Yetley, et al, "Biomarkers of vitamin B-12 status in NHANES: a roundtable summary," *Am J Clin Nutr*, (2011;94[suppl]): 313S–321S.

4. L. H. Allen, "How common is vitamin B12 deficiency?" *Am J Clin Nutr*, (2009;89[suppl]): 693S–696S.

5. S. P. Stabler & R. H. Allen, "Vitamin B12 deficiency as a world-wide problem," *Annu Rev Nutr*, (2004;24): 299–326.

6. M. A. Johnson, et al, "Hyperhomocysteinemia and vitamin B12 deficiency in elderly using Title IIIc nutrition services," *Am J Clin Nutr*, (2003;77): 211–220.

7. A. Anthony, "Vegetarianism and vitamin B-12 (cobalamin) deficiency," *Am J Clin Nutr*, (2003;78): 3–6.

8. C. M. Pfeiffer, et al, "Biochemical indicators of B vitamin status in the US population after folic acid fortification: results from the National Health and Nutrition Examination Survey 1999–2000," *Am J Clin Nutr*, August (2005;82): 442–450.

9. L. H. Allen, et al, "Considering the case for vitamin B12 fortification of flour," *Food and Nutrition Bulletin*, (2010;31): S36–S46.

10. R. Carmel, "Efficacy and safety of fortification and supplementation with vitamin B12: Biochemical and physiological effects," *Food and Nutrition Bulletin*, (2008;28[2]): S177–S187.

11. R. Pawlak, et al, "How prevalent is vitamin B12 among vegetarians?" *Nutrition Reviews*, (2013;71[2]): 110–117.

12. R. Pawlak, et al, "Understanding vitamin B12," *American Journal of Lifestyle Medicine*, (2012;7[1]: 59–65.

13. D. R. Rusher, & R. Pawlak, "A Review of 89 Published Case Studies of Vitamin B12 Deficiency," *J Hum Nutr Food Sci*, (2013;1[2]): 1008.

14. R. Pawlak, *Jestem mama jestem wegetarianka (I am a mother, I am a vegetarian)*, 1st edition, ISBN 078-83-52103-65-2.

15. R. Pawlak, *Zatrzymac mlodosc. Jak opoznic proces starzenia sie i zyc bez chorob*, 1st edition, ISBN 978-83-62103-47-8.

16. R. Pawlak, *W obronie wegetarianizmu (In defense of vegetarianism)*, *Nowe Spojrzenia*, 2nd edition, 2012, ISBN-978-83-61640-27-1.

17. S. Krivosikova, et al, "The association between high plasma homocysteine levels and lower bone mineral density in Slovak women: the impact of vegetarian diet," *Eur J Nutr*, (2010;49[3]): 147–153.

18. T. Kwok, et al, "Vitamin B-12 supplementation improves arterial function in vegetarians with subnormal vitamin B-12 status," *J Nutr Health Aging*, (2012;16[6]): 569–573.

19. A. Waldmann, et al, "German vegan study: Diet, life-style factors, and cardiovascular risk profile," *Ann Nutr Metab*, (2005;49[6]): 366–372.

20. I. Elmadfa, I. Singer, "Vitamin B-12 and homocysteine status among vegetarians: a global perspective," *Am J Clin Nutr*, (2009;89[5](suppl): 1693S–1698S.