A Thrival Testimony and Supporting Scientific Evidence

by Bill J. Gurley, Ph.D.

As a pharmacist, scientist, and hardcore outdoor enthusiast, I'm quite skeptical when it comes to food products marketed for "energy" and "stamina," because I've tried most of them and many, if not all, are lacking. If its not outright unpalatability or an insufferable aftertaste, the bulk rarely live up to their marketing claims, and that's because its hard to formulate an energy bar that is readily palatable with good long-term stability (i.e., shelf-life) while incorporating cutting edge functional ingredients that deliver the nutritional resources essential for inducing satiety and augmenting short term endurance. So, when I recently sampled Thrival, disappointment was my expectation. Boy was I wrong; what a pleasant surprise! To me, the taste and texture of a Thrival bar were the best I have yet encountered. After experiencing the first and subsequent Thrival bars, my thoughts recurred to past travels across Siberia in 1998 where I spent weeks inspecting former Soviet biological weapons facilities for the US State Department. My sponsor and co-investigator had counseled me on taking as many "energy bars" as possible for they might, at best, have to serve as meal replacements and, at worst, serve as one's sole caloric source, especially since eating schedules would be capricious and the cuisine, when available, may not be up to our western expectations. At that time, a bagful of Thrival bars would have been the proverbial God-send compared to what we had on hand. Despite our comestible challenges in Siberia, we managed to return stateside unscathed although a few pounds lighter. (The eye-opening bioweapons revelations are a story for another time.)

Following my initially pleasant, and admittedly surprising, experience with Thrival, my curiosity was piqued. As an internationally-recognized expert in dietary supplements and principal scientist at the National Center for Natural Products Research, I immediately checked out the wrapper's Nutrition Facts panel. After running down the list of ingredients, it made perfect sense why Thrival had dispelled my anticipated disappointment. First, it was easy to spot the product's gratifying gustatory underpinnings: a combination of brown rice syrup, unsweetened chocolate, and cocoa powder. (My biases peek through here as I have to admit that I am a big fan of the flavor of intense dark chocolate, a taste preference I also picked up in Russia.) Thrival's pleasing mouthfeel likely stems from a combination of its principal ingredients: brown rice syrup, sunflower seed butter, organic oats, and pea protein. Other contributors to its satisfying, yet not overpowering, flavor is a medley of fruit extracts (e.g., apple, grape, cranberry, raspberry, tart cherry, and blueberry), which also provide a litany of health benefiting polyphenolic compounds (i.e., anthocyanins). A host of vegetable extracts (e.g., onion, kale, broccoli, turmeric) temper the product's sweetness while supplying a panoply of salubrious phytochemicals (e.g., quercetin, sulforaphane, curcumin, etc.). Rounding out Thrival's nutrient-intense repertoire are *Alpinia galanga* and Marigold extract, two botanicals with promising effects on cognition and mental acuity. Of course, even a paradigm-challenging "energy bar" like Thrival still incorporates several essential nutritional staples like branched-chained amino acids (e.g., L-leucine, L-isoleucine, L-valine), vitamins (e.g., mixed tocopherols, B12, biotin), creatine, and unsaturated fatty acids. Finally, Thrival incorporates green tea and

green coffee bean extracts. Normally, I am not a fan of natural caffeine sources in food products as I feel they add no nutritional benefit and only alter one's perception of "energy." Thankfully, in the case of Thrival, these extracts are decaffeinated and thus the health advantages of green tea and coffee catechins – a well-studied category of polyphenolic compounds – are not supplanted by the cardiovascular and central nervous system side effects of caffeine.

As a practitioner of intermittent fasting – fasting at least 20 hours five separate days a week – I decided to put Thrival through its paces following an 18-hour fast while in the midst of an 8-hour-long hike in the Ouachita Mountains of western Arkansas. My fast ended at 1pm about 4 hours into my trek. I normally eat a well-balanced meal once a fast ends, but in this instance I had a couple of Thrival bars on hand along with several more miles to go. I consumed the first Thrival bar, enjoying its pleasant chocolaty taste then tucking the spent wrapper into my rucksack. I didn't think much more about it as one of the most arduous sections of the trail was at hand. About a mile in I noticed that my ability to focus on taking the most efficient trajectory through the trees and boulders was especially keen, all the while not feeling especially fatigued. Was that the Thrival bar, a combination of Thrival and fasting, or just me being at peace in the wilderness? I credited it to all three. Upon my return to the trailhead, I treated myself to the second Thrival bar, cranked up my 2006 Jeep Rubicon and headed back to Little Rock, my home for 30 years prior to moving to Mississippi. The return drive was one of the most peaceful I'd experienced in a long time and I wasn't the least bit peckish. Thrival I guess. Reflecting upon the product name, it hit me that Thrival was a portmanteau: a combination of the words "thrive" and "survival," an apt moniker indeed for a functional food designed with those two goals in mind.

With that honest assessment of my first encounters with Thrival, I want to examine the ingredients and phytochemical foundations of this unique product to layout what appears to be responsible for its invigorating effects. First, the most obvious difference is the lack of natural stimulants like caffeine, phenylethylamines, yohimbine, etc. This distinction immediately sets it apart from the myriad other "energy bars" on the market. (I use the term "energy bar" for lack of a more appropriate descriptor as most products in this category are packed with natural stimulants; not so with Thrival.) As a pharmacologist and expert in the area of dietary supplements, four key ingredients immediately jump out: *Alpinia galanga* extract, Marigold extract, fruit and vegetable medley, and the S7 blend.

Alpinia galanga. This member of the ginger family bears a rhizome that is a good source of several pharmacologically active phytochemicals, namely flavanoids, glycosides, terpenoids, and polyphenols.[1,2] Recent clinical studies appear to place *A. galanga* and its attendant phytoconstituents into a unique category of supplements known as nootropics. Nootropics are compounds or preparations that improve cognitive function, particularly executive function, attention, and motivation. Caffeine has been long-recognized for its nootropic aspects due to its activity as an adenosine receptor antagonist within the central nervous system. However, along with caffeine's mental stimulation comes a number of less welcome central nervous system side (i.e., "caffeine crash") and cardiovascular (e.g., heart palpitations, transient

hypertension) side effects that lessen its appeal and safety profile. Two recent human clinical trials conducted by Srivastava et al., however, have demonstrated that *A. galanga* functions as a psychostimulant without producing untoward cardiovascular side effects.[3,4] More importantly, *A. galanga* (300 mg) produced better scores for mental alertness than 200 mg of caffeine and these effects were sustained for up to 5 hours.[3] The authors concluded that "this study confirmed the acute psychostimulant benefits of *A. galanga*, rendering it a novel energy ingredient for day-to-day use." The authors further surmised that *A. galanga* has the "potential to create a significant impact on real-life work performance with an absolute requisite of mental alertness for populations such as drivers, video-gamers, college students, and athletes, who always strive to perform better." In a follow-up clinical trial, these researchers confirmed their previous findings with regard to cardiovascular safety and cognitive performance, but also found that *A. galanga* did not affect sleep quality, an especially attractive benefit much unlike that of caffeine. Based upon these clinical findings, it would appear that *A. galanga* is an important contributor to the positive effects experienced when consuming Thrival.

Marigold extract. Another unique plant extract present in Thrival, yet infrequently encountered in other food products, is marigold extract. Like *A. galanga*, marigold (*Calendula officinalis*) extract is a complex mixture of various phytoconstituents with a litany of beneficial health effects.[1,5-9] Long-known for its effectiveness as an anti-inflammatory and utility in promoting wound healing when applied topically,[10] the incorporation of *C. officinalis* extract into Thrival makes perfect sense when one realizes its potent anti-oxidant and free radical scavenging capabilities. For both professional and non-professional athletes as well as the weekend warriors, exogenous antioxidants and/or free radical scavengers are essential for preventing and mitigating the strains and pains derived from oxidative stresses imparted by strenuous exercise. Marigold extract in Thrival provides a ready source of these essential phytonutrients. Moreover, a recent study has demonstrated another beneficial aspect of *C. officinalis* when added to food products: improved product consistency, flavor, overall acceptability, and stability.[11] Thus, by incorporating marigold extract into the Thrival formula both product suitability and shelf-life are enhanced.

Cocoa powder + Fruit and vegetable medley + S7 Blend. Much like marigold extract, the components recognized in Thrival's "Fruit and Vegetable Medley" (e.g., apple extract, onion extract, broccoli, kale, cranberry, and raspberry) "S7 Blend" (e.g., green coffee bean extract, green tea extract, turmeric extract, tart cherry, blueberry, broccoli, kale), and cocoa powder (are host to a panoply of beneficial phytochemcials (e.g., anthocyanidins, catechins, curcumin, sulforaphane, glucosinolates, just to name a few) whose health benefits are backed by legions of studies too numerous to cite in this brief overview; however, a few systematic reviews provide evidence of their utility in athletes and non-athletes.[12-17] Therefore, the functional synergy among all of these phytochemicals, especially among the combined phytoantioxidants, is doubtless one of the salient features of Thrival.

Pea protein. A significant growth in utilizing pea (*Pisum sativum* L.) protein as an alternative protein has recently taken place because of its high nutritional value, high digestibility, nontransgenicity, low allergenicity, and it is almost free from intolerance-causing ingredients

like gluten and lactose. Apart from these benefits, pea protein isolate has also been shown to have improved emulsification properties leading to enhanced texture and mouthfeel of various foods.[18-20] One other recently observed benefit of pea protein supplementation is its ability to mitigate, although to an intermediate degree when compared to whey protein, biomarkers of muscle damage following strenuous weight resistance training.[21] The authors went on to hypothesize that future studies should consider using leucine-fortified pea protein isolate-containing supplements to achieve more clinically relevant results, because leucine supplementation can augment the anabolic properties of plant proteins like that of pea.[22] Interestingly, this is exactly how Thrival is formulated.

Finally, from a formulation perspective, the inclusion of sunflower seed butter is another favorable feature, as it not only supplies several key micronutrients (e.g., copper, magnesium, manganese) and monosaturated fats – the good fats – but will likely improve the bioavailability of several lipophilic phytochemicals present in Thrival through enhancement through promotion of solubility and emulsification via stimulation of bile secretion.

In conclusion, the unique formulation that is Thrival merges multiple nutritional elements to produce a highly palatable and nutrient-dense functional food product that appears to possess both nootropic and adaptogenic benefits applicable for athletes and non-athletes alike.

References.

1. Panche AN, et al. Flavonoids: an overview. *J. Nutr. Sci.* 2016; 5:e47.

2. Sivanandan S, Pimple S. Molecular docking studies of Alpinia galanga phytoconstituents for psychostimulant activity. *Adv. Biol. Chem.* 2018; 8:69-80.

3. Srivastava S, et al. Effect of Alpinia galanga on mental alertness and sustained attention with or without caffeine: A randomized placebo-controlled study. *J. Am. Coll. Nutr.* 2017; 36:631-638.

4. Srivastava S, et al. A randomized placebo controlled clinical trial demonstrating safety & efficacy of EnXtra® in healthy adults. *J. Am. Coll. Nutr.* 2021; 40:224-236.

5. Pires TCSP, et al. Edible flowers as sources of phenolic compounds with bioactive potential. *Food Res. Intl.* 2018; 105:580-588.

6. Mikolajczak N, et al. Edible flowers as a new source of natural antioxidants for oxidative protection of cold-pressed oils rich in omega-3 fatty acids. *Food Res. Intl.* 2020; 134:109216.

7. Lovecka P, et al. Characterization of biologically active substances from *Calendula officinalis*. *Curr. Pharm. Biotech.* 2017; 18:1167-1174.

8. Hamburger M, et al. Preparative purification of the major anti-inflammatory triterpenoid esters from Marigold (*Calendula officinalis*). *Fitoterpia*. 2003; 74:328-338.

9. Miguel M, et al. Chemical characterization and bioactive properties of two aromatic plants: *Calendula officinalis* L. (flowers) and *Mentha cervina* L. (leaves). *Food Funct.* 2016; 7:2223.

10. Ulbricht C, et al. Marigold (*Calendula officinalis* L.): An evidence-based systematic review by the Natural Standard Research Collaboration. *J. Herb. Pharmacother.* 2006; 6:135-159.

11. Kumar A., et al. Effect of rose syrup and marigold powder on the physicochemical, phytochemical, sensorial and storage properties of nutricereals and milk-based functional beverage. *J. Am. Coll. Nutr.* 2020; https://doi.org/10.1080/07315724.2020.1744487

12. Magrone T, et al. Cocoa and dark chocolate polyphenols: From biology to clinical applications. *Front. Immunol.* 2017; 8:677.

13. Rickards L, et al. Effect of polyphenol-rich foods, juices, and concentrates on recovery from exercise induced muscle damage: A systematic review and meta-analysis. *Nutrients*. 2021; 13:2988.

14. Del Bo C, et al. Systematic review on polyphenol intake and health outcomes: Is there sufficient evidence to define a health-promoting polyphenol-rich dietary pattern? *Nutrients.* 2019; 11:1355.

15. Morton L and Braakhuis AJ. The effects of fruit-derived polyphenols on cognition and lung function in healthy adults: A systematic review and meta-analysis. *Nutrients.* 2021; 13:4273.

16. Sanadgol N. Recent updates in imperative natural compounds for healthy brain and nerve function: A systematic review of implications for multiple sclerosis. *Curr. Drug Targets.* 2017; 18:1499-1517.

17. Suhett LG. Effects of curcumin supplementation on sport and physical exercise: a systematic review. *Crit. Rev. Food Sci. Nutr.* 2021; 61:946-958.

18. Kutzli I, et al. Improvement of emulsifying behavior of pea proteins as plant-based emulsifiers via Maillard-induced glycation in electrospun pea protein-maltodextrin fibers. *Food Funct.* 2020; 11:4049-4056.

19. Assad-Bustillos M, et al. Role of the bolus degree of structure on the protein digestibility during in vitro digestion of a pea protein-fortified sponge cake chewed by elderly. *J. Texture Stud*. 2020; 51:134-143.

20. Wee MSM, et al. Physical and sensory characterisation of noodles with added native and denatured pea protein isolate. *Food Chem.* 2019; 294:152-159.

21. Nieman DC, et al. Effects of whey and pea protein supplementation on post-eccentric exercise muscle damage: A randomized trial. *Nutrients.* 2020; 12:2382.

22. van Vliet S, et al. The skeletal muscle anabolic response to plant-versus animal-based protein consumption. *J. Nutr.* 2015; 145:1981-1991.