A Novel Approach to Eliminating Jetlag Using Natural Ingredients

Overview

One of the unwanted consequences of our busy lifestyles is travelling over different time zones, and the need to adapt our bodies accordingly. Because our bodies have set in place biological clocks, which govern our functions according to the perceived periods of day/night, travelling over different time zones can have serious consequences upon our ability to function optimally and in accordance to the new time zone. These alterations, known as desynchronosis or circadian dysrhythmia, reflect not only in suboptimal cognitive abilities (poorer performance on mental tasks and concentration; increased fatigue, headaches, and irritability), but also in alterations to other body systems whose activities are modulated by the day/night cycle, such as digestion (including indigestion), and reduced interest in and enjoyment of food (1). In addition, jet lag also induces alterations in our immune system and response to inflammation (2).

Using the best science available in the field, Bon Voyage Supplements, in collaboration with Advanced Nutrigenomics, has developed a new approach to accelerate the adjustment of the circadian rhythm in travelers who change time zones. This approach uses natural plant components, as well as physiological compounds and nutrients, which act towards resetting the biological clock according to the new time zone requirements.

The Paradigm

Bon Voyage Supplements is the first company to offer a comprehensive approach to reducing jet lag-related issues, based on the clinically demonstrated benefits of our ingredients. Our product contains two supplements, each addressing different mechanisms that regulate the circadian rhythm:

1. A supplement that resets the biological clock to its diurnal state, which inhibits melatonin levels, and which increases the blood flow to the brain, required for the “wake” state;
2. Another supplement that resets the biological clock to its nocturnal state, which increases melatonin levels and other neuro-physiological processes required for the “sleep” state.

Both components are offered within the same product unit, and are to be used in tandem for optimal results.

The Science Behind

The circadian system regulates the timing of many of our physiologic functions, including blood pressure, core body temperature, hunger, mood, cognitive function, and hormonal profiles of cortisol and melatonin, as well as insulin sensitivity (3). The circadian clock oscillates with a period that is typically slightly longer than 24 hours in humans (4). Although circadian rhythms are generated endogenously, they are strongly influenced by the environmental light–dark cycle. In the absence of external time cues, the timing of circadian rhythms, including sleep and wake timing, will drift later each day (5,6). When the timing of the light–dark cycle is altered as a result of transmeridian travel or shift work, it leads to misalignment of the circadian system with
the external physical or work environment. Circadian misalignment has been shown to result in poor sleep and performance and on a more chronic basis is thought to lead to poor health outcomes, including obesity, hypertension, diabetes, and cancer (7).

**Q & A: How long does it take to adapt to another time zone without any intervention?**

As opposed to migratory species, which use their biological clock regularly in order to adapt to time changes during their migration over long distances (e.g. migratory birds), humans evolved in rather more confined geographical areas. When human migrations occurred, these happened with very low speeds, and over small distances (a rather gradual type of migrations). In these circumstances, time changes were small, and humans did not develop the same ability to adapt quickly to significant time shifts. In humans, after a time zone change, the average rate approximates to 1 h of adaptive shift per day (8). This means, for instance in the case of a 7 hour time shift, that an individual will take, on average, 7 days to completely adapt to the new time zone.
Bon Voyage Supplements - A Novel Approach To Reducing Jet Lag

The standard approach for most available competing products is to focus on enhancing the nocturnal state by providing ingredients that induce a relaxation state, or which contain melatonin (the hormone responsible for shifting to the nocturnal state). In such cases, no solution is provided to adapt to the diurnal state, or for that purpose to reduce the residual melatonin levels that remain after taking the product (which would further affect the individual during the day). In other cases, homeopathic remedies are offered, with virtually no scientific backup on their functional claims. In a third case, tandem approaches are offered (for both nocturnal and diurnal states), but which use active ingredients with little, if any, scientific studies that would support their functional claims.

Using independent research published on all its ingredients, Bon Voyage Supplements has developed a complete duo of supplements that adequately address the physiological processes that control the circadian clock.

These processes include:
1. For the diurnal formulation:
   ✓ Reducing the melatonin levels present during the nocturnal cycle;
   ✓ Providing the brain with the necessary vitamins that enhance synaptic transmission and other neuronal functions;
   ✓ Enhancing blood flow to the brain, which is required for the transport of nutrients to the brain, and their use during its diurnal state;
   ✓ Increasing energy metabolism throughout the brain.

2. For the nocturnal formulation:
   ✓ Enhancing the melatonin levels required for inducing the sleep state and resetting the circadian clock;
   ✓ Activation of the neuronal receptors functionally linked with sleep induction;
   ✓ Providing other required metabolites/minerals that stimulate the induction of sleep and the resetting the circadian clock, in conjunction with melatonin.

These objectives are achieved by using active ingredients of plant origin and physiological compounds, with clinically tested efficacy for each of their roles.

Q & A: What are the negative health consequences of disrupting the circadian rhythm in humans?

The mismatch between the endogenous circadian clock and the external environment results in a circadian rhythm sleep–wake disorder that is typically characterized by symptoms of insomnia, excessive sleepiness, fatigue, and physical complaints, such as gastrointestinal disruption, that negatively impact daily functioning. In addition, other long-term consequences are linked with this disruption, such as obesity, hypertension, diabetes, cancer, and alterations in the immune response (2,7).

How It Works

Depending on the type of time shift (either forward or back), the traveler will start with either the day pill, followed by the night pill, or the other way, as exemplified below (see also chart on next page).
1) **Traveler flies West.** For example from London, UK (7 PM local time of departure) to US. He or she arrives in Charlotte, US, at 7 AM local time. However, the traveler’s biological clock is set for 2 AM, for this is the equivalent time in UK. In this case the traveler will take one day pill (1 hour before arrival), in order to reset his/her circadian rhythm for the beginning of the day. Approximately six hours later (1 PM) the traveler will take a second day pill in order to maintain his/her diurnal state. One hour before sleep (e.g. 9 PM US local time), the traveler will take one night pill in order to reset the biological clock to the nocturnal state. Next day, and only if needed, the cycle repeats (two day pills at 6 hour interval, followed by a night pill before sleep time), until the traveler decides that he/she has adjusted to the local time.

2) **Traveler flies East.** For example from Charlotte, US (7 AM local time of departure) to London, UK. He or she arrives in London at 8 PM. However, the traveler’s biological clock is set at 3 PM, for this is the equivalent time in US. In this case, the traveler will take one night pill (1 hour before going to bed), in order to reset his/her circadian rhythm for the nocturnal stage (end of day). Next morning the traveler can start taking one day pill in the morning, followed by a second day pill during the day (usually at a 6 hour interval). If needed, this cycle repeats until the traveler decides that he/she has adjusted to the local time.
References