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Ancient wisdom meets modern ailment – Traditional Asian medicine improves psychological Vigor in stressed subjects

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TITOLO

La saggezza antica incontra la
malattia moderna -
La medicina tradizionale
asiatica migliora il vigore
psicologico in soggetti stressati

KEY WORDS

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PAROLE CHIAVE

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Summary

Chronic stress plays a major role in the pathophysiology of many disease states, particularly psychological disorders including depression, chronic fatigue syndrome, anxiety, fibromyalgia, and burnout. These stress-related changes in psychology may be due to both endocrine and behavioral factors – and may be mediated or attenuated by lifestyle factors including diet, exercise, and dietary supplements. Vigor is defined as a 3-tiered sustained mood-state that is characterized by (1) physical energy, (2) mental acuity, and (3) cognitive liveliness. Vigor can also be described as the opposite of “Burnout” (physical fatigue, mental exhaustion, and cognitive weariness). Our objective was to assess changes in Vigor, Mood State, and Metabolic Hormone Profile (cortisol and testosterone balance) in response to a modest lifestyle intervention including a dietary supplement based on traditional Asian medicine and including *Eurycoma longifolia* root, *Citrus sinensis* peel, and *Camellia sinensis* leaf – each of which is used in traditional Asian medicine to improve “life force” and well-being in fatigued individuals. We report on 82 subjects – all displaying moderate levels of psychological stress. We measured endocrine parameters [salivary cortisol to testosterone, (C:T) ratio], and Global Mood State (MOOD) and related subscales: Vigor (V), Fatigue (F), and Depression (D), using the Profile of Mood States (POMS) psychological survey before and after the supplementation intervention. Subjects followed a supplementation periods of either 8-weeks or 12-weeks. Each intervention included recommendations to follow a balanced diet, moderate exercise, and daily supplementation. Compared to pre-supplementation values, post-supplementation measurements indicated significant changes for C:T ratio (-15-19%), MOOD (+20-22%), Vigor (+27-29%), Fatigue (-41-48%), and Depression (-40-52%). These data indicate that factors that are typically disrupted during periods of chronic stress (metabolic hormone profile and psychological mood state) may be positively and significantly impacted by modest changes in diet, exercise and supplementation patterns that mirror those commonly used in traditional Asian medicine.

Riassunto

Lo stress cronico gioca un ruolo importante nella fisiopatologia di molti stati morbosi, in particolare disturbi psicologici come la depressione, la sindrome da affaticamento cronico, l'ansia, la fibromialgia e il burnout. Questi cambiamenti nella psicologia correlati allo stress possono essere dovuti sia a fattori endocrini che fattori comportamentali - e possono essere mediati o attenuati da fattori legati allo stile di vita, quali la dieta, l'esercizio fisico e la supplementazione con integratori alimentari. Il vigore è definito come uno stato d'animo composto da 3 livelli caratterizzato da: 1) energia fisica, 2) acutezza mentale, e (3) vivacità cognitiva. Il vigore può anche essere descritto come l'opposto del "burnout" (stanchezza fisica, esaurimento mentale e logoramento cognitivo). Il nostro obiettivo è stato quello di valutare i cambiamenti nel vigore, nello stato d'animo e nel profilo metabolico ormonale (equilibrio tra cortisolo e testosterone) in risposta ad un intervento moderato sullo stile di vita che include una supplementazione dietetica basata sulla medicina tradizionale asiatica, comprendente radici di *Eurycoma longifolia*, scorze di *Citrus sinensis* e foglie di *Camellia sinensis* - ciascuno dei quali è utilizzato nella medicina tradizionale per migliorare la "forza vitale" e il benessere nei soggetti stanchi. Sono stati studiati 82 soggetti: tutti mostravano livelli moderati di stress psicologico. Abbiamo misurato i parametri endocrini [dal cortisolo salivare (C) al testosterone (T) e il rapporto C:T] e il Global Mood State (MOOD) e sottoscale correlate: vigore (V), affaticamento (F), e depressione (D), utilizzando il test di indagine psicologica Profile of Mood States (POMS) prima e dopo l'intervento di supplementazione dietetica. I soggetti hanno seguito un periodo di supplementazione o di 8 o di 12 settimane. Ciascun intervento ha incluso raccomandazioni a seguire una dieta equilibrata, moderato esercizio fisico e una supplementazione giornaliera. Rispetto ai valori pre-supplementazione, le misure post-supplementazione hanno indicato cambiamenti significativi per il rapporto C:T (-15-19%), MOOD (+20-22%), vigore (+27-29%), affaticamento (-41-48%) e depressione (-40-52%). Questi dati indicano che i fattori che generalmente vengono tipicamente alterati durante i periodi di stress cronico (profilo ormonale e metabolico e stato d'animo psicologico), possono essere positivamente e significativamente influenzati da modeste variazioni nella dieta, esercizio fisico e modelli di supplementazione dietetica che rispecchiano quelli comunemente usati nella medicina tradizionale asiatica.

Background

Chronic stress plays a major role in the pathophysiology of many disease states, particularly psychological disorders including depression, chronic fatigue syndrome, anxiety, fibromyalgia, and burnout (1-4). These stress-related changes in psychology may be due to both endocrine and behavioral factors – and may be mediated or attenuated by lifestyle factors including diet, exercise, and dietary supplements. Vigor is defined as a 3-tiered sustained mood-state that is characterized by (1) physical energy, (2) mental acuity, and (3) cognitive liveliness. Vigor can also be described as the opposite of “Burnout” (physical fatigue, mental exhaustion, cognitive weariness).

Basis for Metabolic Hormone Balance and Mood

In both men and women, a balance between cortisol and testosterone is needed to build muscle and other proteins, such as immune system components, and control many aspects of physiology, including blood cell production and metabolism of protein, carbohydrates, and fat from food (5, 6). A rise in cortisol exposure and/or a drop in testosterone in both men and women, leads to fatigue, a loss of sex drive, and abdominal adipose accumulation (7-13).

It is well described in the scientific and medical literature that male or female subjects who have low levels of testosterone are more likely to be depressed than those with normal testosterone levels (4, 5, 13). When testosterone levels are brought back to normal levels, mood also returns back to normal levels (5, 8). Dozens of studies show that maintaining testosterone levels at more “youthful” levels (that is, keeping them from dropping with age) is associated with numerous health benefits in both men and women (6, 9). For example, men and women with low testosterone develop abdominal obesity (belly fat), a loss in sex drive, and become depressed.

Overview of Dietary Supplement Ingredients

The herbal blend evaluated was a combination of ingredients used in traditional Asian medicine, including Eurycoma root extract (*Eurycoma longifolia*, standardized to 40% glycosaponins and 22% eurypeptides), Citrus peel extract (*Citrus sinensis*, standardized to 30% polymethoxylated flavones), Green tea extract (*Camellia sinensis*, standardized to 30% catechins and L-theanine). Existing research evidence supports the potential health benefits of each individual ingredient in the combination for-

mula. For example, Eurycoma root extract is known to balance systemic testosterone exposure (in rodent research models); Citrus peel extracts (containing PMFs) are known to balance cellular cortisol exposure (in cell culture experiments); Green tea extract is known to balance norepinephrine levels and increase calorie expenditure (in humans); and Theanine is known to balance brain waves and reduce anxiety (in animal models).

Purpose of Research Series

The purpose of these studies was to examine the role of chronic stress on metabolic hormone balance and psychological mood state in moderately stressed subjects. Cortisol overexposure is well known in the scientific literature to increase appetite and promote fat storage in the abdominal area. The holidays are often cited as a stressful time of the year (Thanksgiving to New Year’s Day), and a time during which many people gain weight. The literature strongly suggests that stress/cortisol exposure is associated with increased appetite, weight gain, and specifically with increased abdominal adiposity (1-4). The literature also suggests that weight gain is significant and weight loss difficult (14, 15) during the 6-week holiday period.

High cortisol secretion is associated with abdominal fat, which is most highly associated with illness and death from cardiovascular disease, diabetes, and metabolic syndrome, including hypertension, hyperlipidemia, hyperinsulinemia, & insulin resistance (3, 4, 12). Women with a high cortisol response to stress (compared to low responders) have been shown to consume more calories, eat significantly more sweet foods, and have more negative moods (1, 2) and such high levels of “dietary restraint” (defined as “consciously trying to limit food intake to achieve or maintain a desired body weight”) have been associated with high urinary cortisol excretion (2).

Methods

We recruited 82 self-reported “high-stress” volunteers. Fifty (50) participated in an 8-week lifestyle intervention program and 32 participated in a 12-week intervention. Each program included education about stress management, nutrition intervention, exercise recommendations, and dietary supplementation. Subjects followed a moderate calorie-restricted diet based on resting metabolic rate, plus a moderate exercise program (5 d/wk with aerobic/strength training), stress management tech-

niques, and an “anti-stress” dietary supplement (daily – described above). We measured body weight (BW), body fat (BF), salivary cortisol and testosterone (C and T), & stress levels (MOOD by Profile of Mood States) before & after each intervention. Paired Student’s t-tests were used to assess differences between pre/post measures. Statistical significance was accepted at $P < 0.05$. Data are expressed as mean + SD.

Results

Baseline characteristics of each subject cohort (8-wk and 12-wk intervention) are shown in Table 1. Results show that the lifestyle program, in both 8-week and 12-week iterations, led to significant changes in BW and BF (data not shown), C:T ratio (Figure 1), and MOOD scores (Figure 2, all $p < 0.05$ compared to baseline values).

Table 1 -

Baseline Characteristics	Age (y)	BW (kg)	BF (%)	BMI
8-week Intervention N = 46 complete (of 50)	44±7	78.5±16.3	32.4±6.9	28.8±4.8
12-week Intervention N = 29 complete (of 32)	44±8	84.1±39.5	35.1±9.9	29.5±5.6

Figure 1 - Hormone Profile

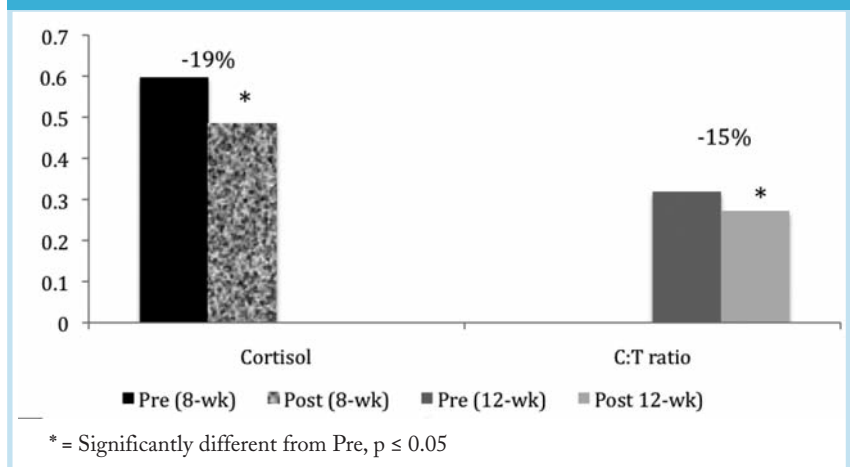
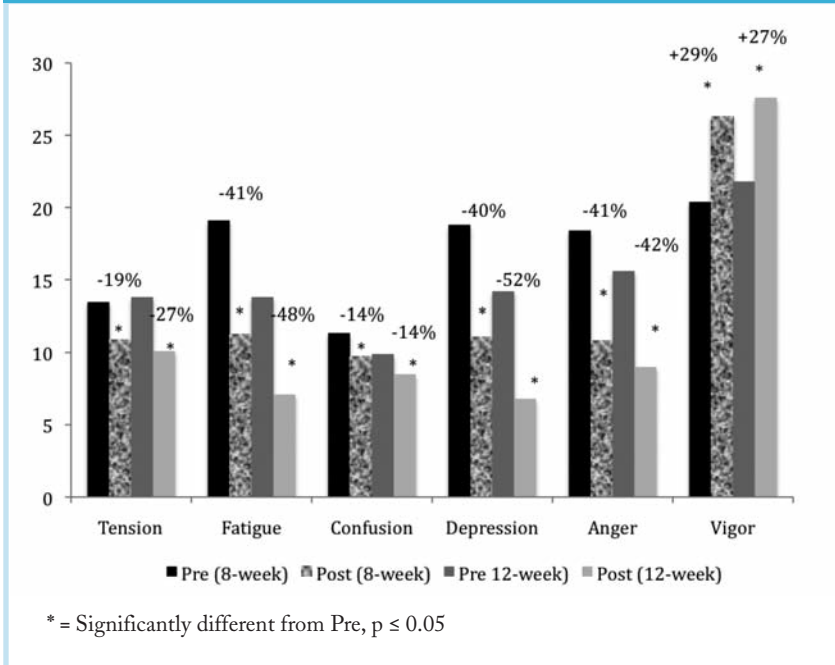


Figure 2 - Profile of Mood States (POMS)



Discussion

These findings show that even individuals self-described as “high-stress” can derive significant benefits in controlling stress, maintaining hormone balance, and reducing body fat from lifestyle interventions including dietary supplementation based on traditional Asian medicine. These data also demonstrate the effectiveness of the blend of traditional medicine ingredients in promoting weight loss and hormone balance (-15% C:T ratio), as well as in improving measures of Mood (+20-22% in Global Mood and -40-52% in

Depression), Vigor (+27-29%), Energy (-41-48% in Fatigue), and Mental Function (-14% in Confusion).

Among normal healthy individuals, the chronic stress of daily living (bills, traffic, deadlines, family issues, including sleep deprivation) represent a scenario of varying degrees of elevated cortisol and suppressed testosterone (overall increase in relative C:T ratio) that may lead to alterations in Mood State. As with athletes and dieters as models for chronic stress, it would be expected that maintaining normal metabolic hormone balance could help resto-

re certain aspects of a positive mood state in individuals with moderate levels of psychological stress. For a dieter (restricting calories for weight loss), it would be expected for cortisol (a catabolic hormone) to rise and testosterone (an anabolic hormone) to drop following several weeks of dieting (1, 2). This change in hormone balance (cortisol up and testosterone down) is an important cause of the familiar “plateau” that many dieters hit (when weight loss stops) after 6-8 weeks on a weight loss regimen. By maintaining normal testosterone levels, a dieter could expect to also maintain their muscle mass and metabolic rate (versus a drop in both subsequent to lower testosterone levels) – and thus continue to lose weight without plateauing. For an athlete, the same rise in cortisol and drop in testosterone is an early signal of overtraining – a syndrome characterized by reduced performance, increased injury rates, suppressed immune system activity, increased appetite, moodiness, and weight gain. Logically, maintenance of normal testosterone levels could prevent some of these overtraining symptoms as well as help the athlete to recover faster/better from daily training bouts.

These studies have demonstrated that maintaining normal metabolic hormone balance (C:T ratio) under differing conditions of

chronic stress (dieting stress, and the stress of daily living, including the holidays) is a logical and effective modality for reducing levels of negative mood state (tension, fatigue, mental confusion, depression, and anger/irritability) and maintaining positive psychological mood state (well-being and vigor). It is concluded from this series of studies that across various types and durations of stress exposure, and across different age and gender groups, the addition of a “balancing” dietary supplement based on traditional Asian medicine, is effective in balancing metabolic hormone profile, reducing stress, and improving mood state.

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