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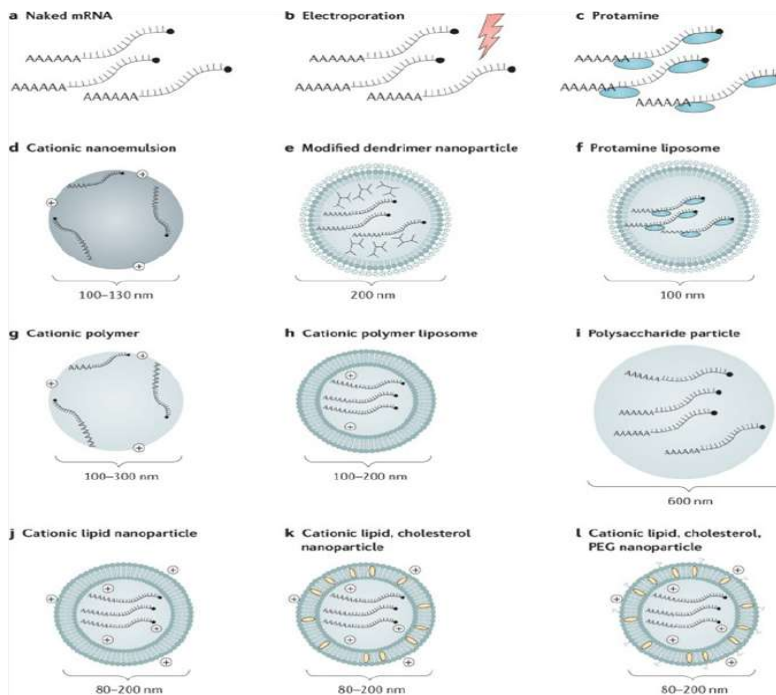
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Basosquamous Carcinoma



Page No. 8



Nature Reviews | Drug Discovery

mRNA “Advance Vaccine Technology” - Part II

Page No. 14



Natural Stress Busters

SANJAY AGRAWAL

INTRODUCTION

Stress is a psychological and physical response to the demands of daily life that exceed a person's ability to cope successfully. In response to stressors, a set of adaptive physiological processes are initiated that aim to restore homeostasis. The physiological mechanisms of the stress response involve the hypothalamic-pituitary-adrenal (HPA) axis and the autonomic nervous system (ANS). These mechanisms interact with each other and have positive feedback loops at different levels. If the capacity of the stress response system to adapt is overwhelmed, stress disorder may develop.

The World Health Organization (WHO) has called stress 'the health epidemic of the 21st century'. Body's response to stress depends on the type and duration of exposure to the stressors. It may lead to short-term effects (e.g., increased blood pressure, increased heart and respiration rates, increased alertness) or long-term effects (e.g., impaired hippocampal neurogenesis, cognitive and memory disorders) (Ref.1). If stress persists and is left untreated, it can result in serious physical (cardiovascular, gastrointestinal, neurological, musculoskeletal, sexual, diabetes) as well as psychological (anxiety, depression) disorders (Ref.2).

Role of major medicinal plants known to have beneficial actions in management of stress is briefly described below.

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WITHANIA SOMNIFERA

Withania somnifera, commonly known as "Ashwagandha" or "Indian ginseng" is an excellent adaptogen that is being used since ancient times in Ayurvedic medicine. Its benefits may arise from induction of neuroplasticity, antioxidant and anti-inflammatory effects, and modulation of GABA and glutamate, as well as other neurotransmitters. (Ref.3).

A systematic search was performed in PubMed/Medline, Scopus, and Google Scholar from inception until December 2021 to investigate the effect of Ashwagandha extract on anxiety and stress. Overall, 12 eligible papers with a total sample size of 1,002 participants and age range between 25 and 48 years were included in this systematic review and meta-analysis. It reported that Ashwagandha supplementation significantly reduced anxiety and stress level compared to the placebo. (Ref.4).

Another meta-analysis of five randomized controlled trials containing 400 participants reported that Ashwagandha extract had a small but significant effect on overall sleep. The effects on sleep were more prominent in the subgroup of adults diagnosed with insomnia. Ashwagandha extract also improved mental alertness on rising and anxiety level (Ref.5).

A prospective, randomized, double-blind, placebo-controlled study conducted in elderly individuals suggested that Ashwagandha root extract was efficient in improving the QoL, sleep quality, and mental alertness. (Ref.6).

RHODIOLA ROSEA (RHODIOLA)

Rhodiola rosea (Rhodiola) is an

adaptogen used to manage physical symptoms of stress with a long history of traditional use. This herb is useful in reducing mental fatigue, depression, and in improving recovery from stress-induced physical fatigue. The European Medicines Agency (EMA) herbal monograph describes its traditional use for short-term relief of mild and moderate stress-related symptoms (Ref.7).

In a study, *Rhodiola rosea* relieved both physical and psychological symptoms of stress and also normalised stress hormone levels. (Ref.8). A 2022 review article reported the effectiveness of rhodiola in stress-induced depression and fatigue as well as its ability to positively affect work productivity and provide anti-inflammatory benefits. (Ref.9).

EURYSOMA LONGIFOLIA

Eurycoma longifolia is a medicinal plant commonly called tongkat ali (TA) and "Malaysian ginseng."

The results of a study conducted in 63 subjects indicated that daily supplementation with tongkat ali root extract improves stress hormone profile. (reduced cortisol exposure (-16%) and increased testosterone status (+37%) and certain mood state parameters (Tension (-11%), Anger (-12%), and Confusion (-15%)). (Ref.10).

LAVANDULA ANGUSTIFOLIA

Lavender is considered as one of the medicinal plants to manage stress. A Systemic review and meta-analysis of 21 studies with a sample size of 791 in the intervention group and 804 in the control group, observed that stress score after using lavender in the intervention group showed a significant decrease, more than that in the control group ($p < 0.001$). (Ref.11).

PASSIONS FLOWER

Passiflora incarnata is a flowering herb native to the South-eastern part of North America. Passionflower has been studied to determine its effects on mental stress and related disorders such as anxiety. A 2022 systematic review looked into the efficacy of Passionflower for stress reduction. While included studies were limited, the authors concluded that passionflower was an effective method of treating stress, anxiety and insomnia (Ref.12)

LEMON BALM (MELISSA OFFICINALIS L.)

The European Medicines Agency approved lemon balm for the relief of mild symptoms of mental stress and as an aid for sleep(Ref.13).

L-THEANINE

L-theanine is the most abundant (50%) water-soluble non-protein amino acid found in *Camellia sinensis* (tea) leaves. L-theanine has been shown to quickly improve stress perception and resilience. The stress-buffering mechanisms of L-theanine have been connected with its ability to increase serotonin and dopamine production in the brain (Ref.14). L-theanine has also been shown to significantly increase alpha brain wave activity, which is critical for increasing attention as well as promoting a sense of relaxation. In a recent study, conducted in 50 volunteers it was observed that L-theanine promoted the generation of alpha-brain waves, considered to be an index of relaxation, in the volunteers. This study concluded that one way in which L-theanine promotes relaxation in humans is by increasing alpha brain waves. (Ref.15). It also has neuroprotective action and is known to protect nerve cells overstimulated by the excitatory neurotransmitter glutamate.(Ref.16).

MAGNESIUM

Magnesium is an essential mineral

for humans. Being the second most abundant intracellular cation, magnesium is involved in almost all major metabolic and biochemical processes.

Magnesium is known to inhibit the glutamatergic transmission while promoting GABA activity, resulting in a mostly inhibitory effect at the central level (Ref.17). Magnesium also tends to diminish the stress response mediated by catecholamines and glucocorticoids.

In a study investigating the potential benefit of magnesium supplementation in women who suffered from chronic emotional stress(irritability, fatigue, and sleep disorders),it was observed that 60% had magnesium deficiency (Ref.18). In other studies, subclinical chronic magnesium deficiency was found in up to 45% of the stressed subjects enrolled(Ref.19).

A recent study, in 264 healthy adults with low magnesium levels showed that oral magnesium supplementation alleviated stress. (Ref.20).

Another study, conducted in patients suffering from fibromyalgia and stress, also reported that one month magnesium supplementation reduced symptoms of mild to moderate stress (Ref.21).

CONCLUSION

In today's fast-paced world, we need to manage stress in our lives. Pharmaceutical drugs though effective in relieving stress, their use is often associated with many adverse effects.

Current research has shown that many medicinal plants have the potential to alleviate various symptoms of stress. They offer a safe, effective and well tolerated option for managing stress.

REFERENCES

1. Yaribeygi, H.; Panahi, Y. et al. *EXCLI J.* 2017, 16, 1057–1072.
2. McEwen, B.S.; Akil, H.. *J. Neurosci.*2020, 40, 12–21.
3. Migita D'Cruz , Chittaranjan Andrade *Expert Rev Clin Pharmacol.* 2022 Sep;15(9):1067-1080.
4. *Camellia Akhgarjand , Farzaneh Asoudeh et al Phytother Res.* 2022 Nov;36(11):4115-4124.
5. Kae Ling Cheah, Mohd Noor Norhayati et al *PLoS One .*September 24, 2021.
6. Sunil B Kelgane , Jaysing Salve et al. *Cureus.* 2020 Feb 23;12(2):e7083.
7. *Rhodiola roseae rhizoma et radix - European Medicines Agency.* European Medicines Agency; 2018. Published September 17.
8. Ion-George Angheliescu, David Edwards et al *Int. J OF Psych in clin prac* 2018:vol. 22, no.4, 242–252.
9. Ivanova Stojcheva E, Quintela JC *Molecules.* 2022;27(12):3902.
10. Talbott et al. *Journal of the International Society of Sports Nutrition* 2013, 10:28.
11. Tina Ghavami a, Mohsen Kazemini *Complementary Therapies in Medicine* 68 ,2022:102832.
12. Janda K, Wojtkowska K, et al. *Nutrients.* 2020;12(12):3894.
13. HMPC Community herbal monograph on *Melissa officinalis L.*,2007.
14. Yokogoshi H, Kobayashi M, et al. *NeuroChem Res* 1998; 23(5):667-73.
15. Juneja L, Chu D, et al. *Trends in Food Science &Technology.* 1999; 10: 199-204.
16. Kakuda T, Hinoi E, Abe A, et al. *J Neurosci Res* 2008;86(8):1846-56.
17. Murck, H. *Nutr. Neurosci.* 2002, 5, 375–389.
18. Akarachkova, E. *Probl. Women Health* 2013, 8, 57.
19. Nielsen, F.H.; Johnson, L.K. et al. *Magnes. Res.*2010, 23, 158–168.
20. Noah, L.; Pickering, G.; Mazur et al. *Magnes.Res.* 2020, 33, 45–57.
21. Nicolas Macian, Christian Dualé et al. *Nutrients* 2022, 14, 2088. ❖