KinBio

# Botanical Beverage Goji berry, Red beet and Prune

# Banana improves sleep

| | PSQI scores | | Total sleep time (min) | | Sleep Efficiency (%) | | Sleep Latency (min) | |
|---|---|---|---|---|---|---|---|---|
| | Before | After | Before | After | Before | After | Before | After |
| **Banana** | 9.3±2.4 | 4.7±0.7 | 204±78.6 | 253±71.9 | 52.3±20.8 | 68.4±13.9 | 121±71.8 | 36.3±34.3 |
| **Control** | 10.1±3.1 | 8.4±1.3 | 263±68.5 | 289±68.5 | 62.5±18.2 | 65.3±25.6 | 57.9±51.4 | 55.8±61.8 |

21 patients with insomnia participated in this study. The results showed that Pittsburg Sleep Quality Index scores (PSQI) of the banana group was reduced after intervention ($p<0.05$), indicating better sleep quality. The total sleep duration and sleep efficiency of the individuals was also increased with shortened sleep latency (falling asleep more quickly) at the end of the study. Thus, banana was found effective in improving sleep and promoting relaxation.

Keser, M.G., Yuksel, A., Ekmekci, A.H. and Vatansev, H., 2024. Bedtime banana and milk intake on sleep and biochemical parameters. *Asia Pacific Journal of Clinical Nutrition*, *33*(4), p.481.

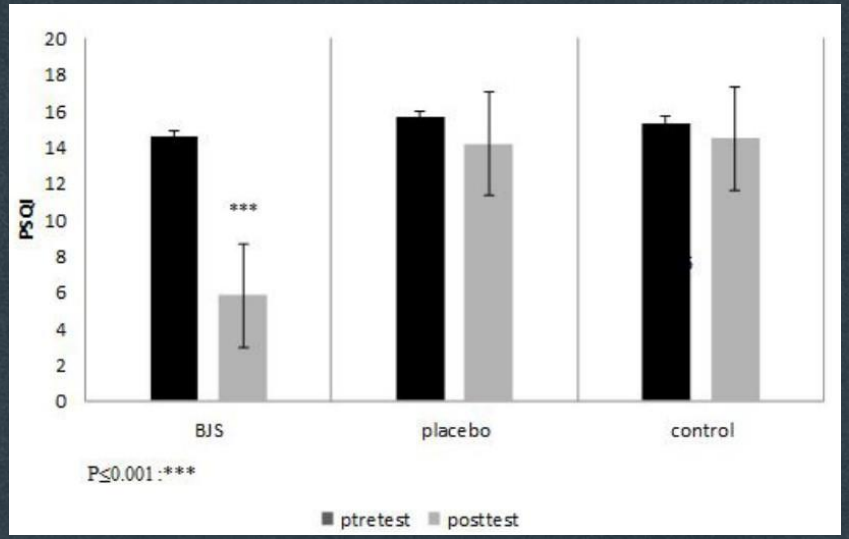
# Goji berry has high melatonin levels

| Type of fruit | Melatonin level (ng/gFW) |
|---|---|
| Goji berry | 1600.48±23.66 |
| Black mulberry | 178.70±0.57 |
| White mulberry | 183.29±6.27 |
| Bursa black mulberry | 177.91±27.51 |
| Blackberry | 233.86±7.20 |
| Purple mulberry | 123.44±2.05 |

Melatonin can be naturally produced in our body to encourage sleep, reducing the length of time needed to fall asleep and increase the duration and quality of your sleep. Intake of fruit with melatonin is believed to help for insomnia. The results from this study showed that the amounts of melatonin in fruit samples ranged from 123.44 to 1600.48 ng/g FW and Goji berry was reported with the highest melatonin content.

Uğur, Y., 2021. Investigation of melatonin content and antioxidant capacity in grape berries. *İnönü Üniversitesi Sağlık Hizmetleri Meslek Yüksek Okulu Dergisi*, *9*(3), pp.820-830.

# Beet root improves sleep quality




30 male athletes participated in the study and divided randomly into three groups of beetroot juice supplement (BJS); placebo and control. The results suggested that BJS group had a significant improvement in quality of sleep (with lower Pittsburgh Sleep Quality Index score) compared to placebo and control groups due to the increase of nitric oxide levels followed by BJS.

Shamloo, S., Irandoust, K. and Afif, A.H., 2019. The effect of beetroot juice supplementation on physiological fatigue and quality of sleep in male athletes. *Sleep and Hypnosis (Online)*, *21*(2), pp.97-100.

# Avocado improves sleep health

| Variable | Study arms | | | | Estimated between-group difference | |
|---|---|---|---|---|---|---|
| | Avocado-supplemented diet group | | Habitual diet group | | | |
| | n | LSM±SEM | n | LSM±SEM | Mean (95% CI) | *P* value |
| Sleep health | 464 | 1.66±1.04 | 473 | -1.54±1.04 | 3.20 (0.38 to 6.02) | 0.02 |

A randomized controlled trial with 969 participants was conducted, the Avocado-Supplemented Diet Group was provided with 1 avocado per day, and the Habitual Diet Group was instructed to maintain their usual diet.
At 26 weeks, the results showed that the Avocado-Supplemented Diet Group had a greater increase in scores for sleep health (3.20 points [95% CI, 0.38–6.02) compared with the Habitual Diet Group. Thus, avocado is beneficial for improving sleep health.

Damani, J.J., Kris-Etherton, P.M., Lichtenstein, A.H., Matthan, N.R., Sabaté, J., Li, Z., Reboussin, D. and Petersen, K.S., 2025. Effect of Daily Avocado Intake on Cardiovascular Health Assessed by Life's Essential 8: An Ancillary Study of HAT, a Randomized Controlled Trial. *Journal of the American Heart Association*, *14*(5), p.e039130.

# Grape Seed reduces preceived stress

| | Placebo group | | | Grape seed Group | | |
|---|---|---|---|---|---|---|
| | Week 0 | Week 8 | Week 16 | Week 0 | Week 8 | Week 16 |
| **Worries score** | 17.9 | 14.9 | 18.4 | 16.5 | 14.7 | 13.7 |

In both men and women, no changes or rather a very minor worsening, were observed between the beginning and end of the intervention in the placebo groups, but a distinct reduction of the subscale PSQ worries under Grape seed supplementation which was more pronounced in women than in men (women: V1: 21.2 ± 16.0, V3: 17.3 ± 18.4; men: V1: 13.0 ± 13.4; V3: 11.0 ± 13.7).
Thus, grape seed helps to reduce stress perception.

Schön, C., Allegrini, P., Engelhart-Jentzsch, K., Riva, A. and Petrangolini, G., 2021. Grape seed extract positively modulates blood pressure and perceived stress: A randomized, double-blind, placebo-controlled study in healthy volunteers. *Nutrients*, *13*(2), p.654.

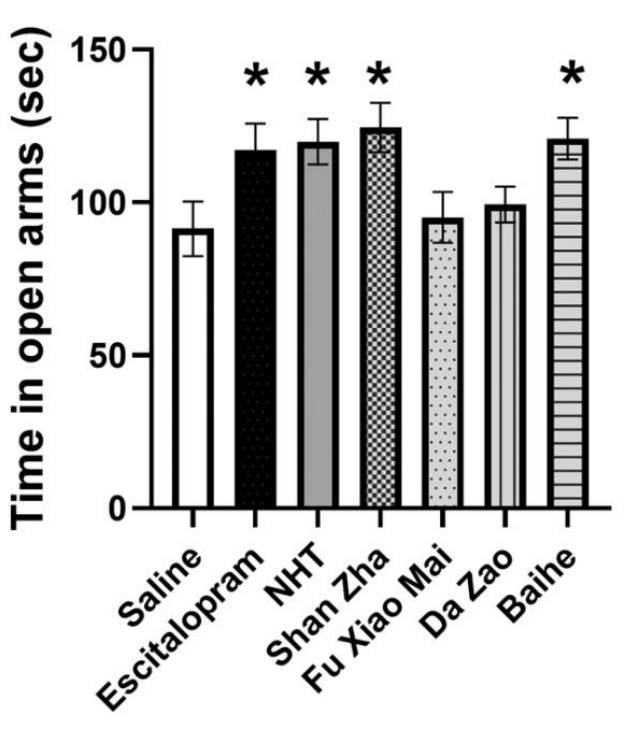
# Blueberry eases anxiety

| | Placebo Group | | Blueberry group | |
|---|---|---|---|---|
| | **Pre** | **Post** | **Pre** | **Post** |
| **State Trait Anxiety Inventory (STAI) State** | 32.60±10.76 | 35.87±11.10 | 30.67±9.55 | 28.87±6.83 |
| **State Trait Anxiety Inventory (STAI) Trait** | 40.20±10.66 | 40.73±11.43 | 39.33±9.98 | 33.07±8.94 |

The State-Trait Anxiety Inventory originally divided anxiety into two factors: state anxiety, reflecting how an individual currently feels, and trait anxiety, reflecting how an individual generally feels. This study showed that both state and trait anxiety scores were significantly reduced in the blueberry group compared to placebo.
Thus, blueberry may help to reduce the level of anxiety.

Sinclair, J., Bottoms, L., Dillon, S., Allan, R., Shadwell, G. and Butters, B., 2022. Effects of montmorency tart cherry and blueberry juice on cardiometabolic and other health-related outcomes: A three-arm placebo randomized controlled trial. *International Journal of Environmental Research and Public Health*, *19*(9), p.5317.

# Anxiolytic effect of Hawthorn berry

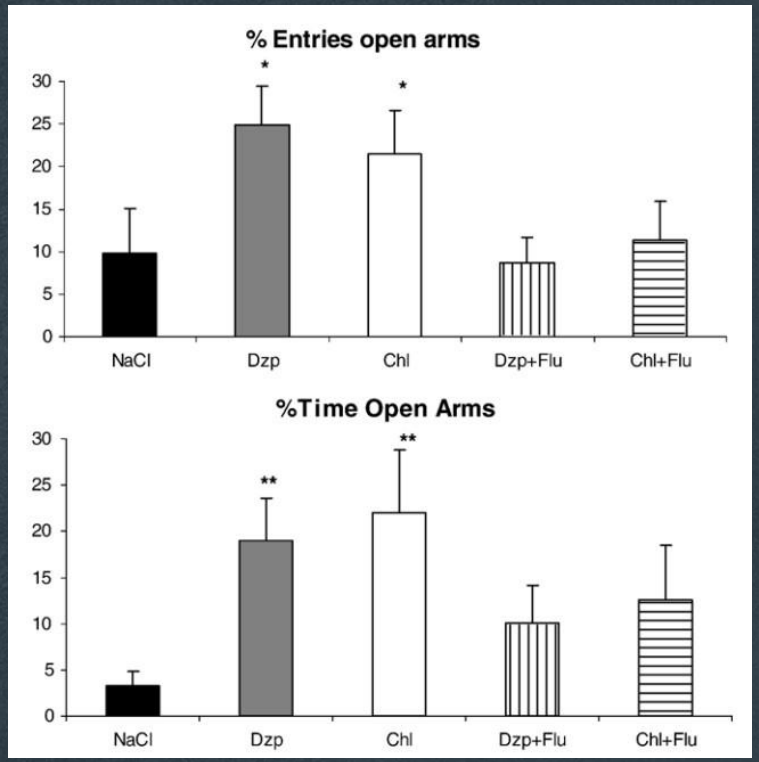



12–17 mice per group were subjected to 4 weeks of unpredictable chronic mild stress and treated with Escitalopram, NHT, Crataegus pinnatifida, Triticum aestivum, Lilium brownii, and Ziziphus jujuba for 3 weeks.

Elevated plus maze (EPM) was used to test for anxiety-like behaviors. Hawthorn berry-treated mice spent the longest time in the open arms of the maze and had a similar magnitude of effect as escitalopram and NHT (combinations of 4 Crataegus pinnatifida, Triticum aestivum, Lilium brownii, and Ziziphus jujuba). This indicates hawthorn berry reduced anxiety-like behaviour. Thus, hawthorn berry has anxiolytic effect.

Nitzan, K., David, D., Franko, M., Toledano, R., Fidelman, S., Tenenbaum, Y.S., Blonder, M., Armoza-Eilat, S., Shamir, A., Rehavi, M. and Ben-Chaim, Y., 2022. Anxiolytic and antidepressants' effect of Crataegus pinnatifida (Shan Zha): biochemical mechanisms. *Translational Psychiatry*, *12*(1), p.208.

# Prune reduces anxiety level



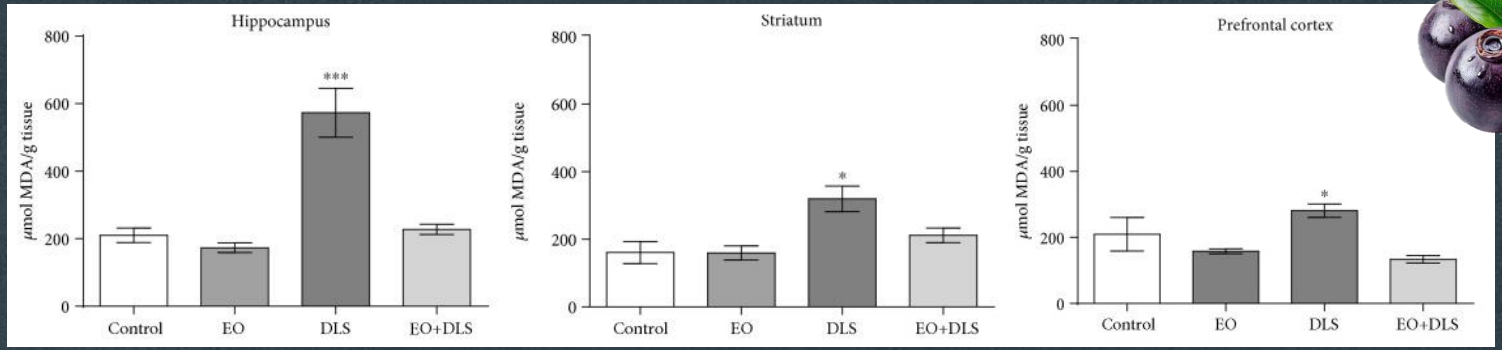

The anti-anxiety effect of chlorogenic acid in Prunus domestica was tested using the elevated plus maze.

The results showed that Mice treated with chlorogenic acid (Chl) from prune at 20 mg/kg spent significantly more time in the open arms and made significantly more entries into open arms versus control, which was similar to that induced by diazepam diazepam (Dzp) at 1 mg/kg.

The results also showed that the anti-anxiety effect was blocked by flumazenil, a benzodiazepine receptor antagonist, suggesting that prune reduces anxiety by activating the benzodiazepine receptor.

Bouayed, J., Rammal, H., Dicko, A., Younos, C. and Soulimani, R., 2007. Chlorogenic acid, a polyphenol from Prunus domestica (Mirabelle), with coupled anxiolytic and antioxidant effects. *Journal of the neurological sciences*, *262*(1-2), pp.77-84.

# Acai berry reduces oxidative stress in brain

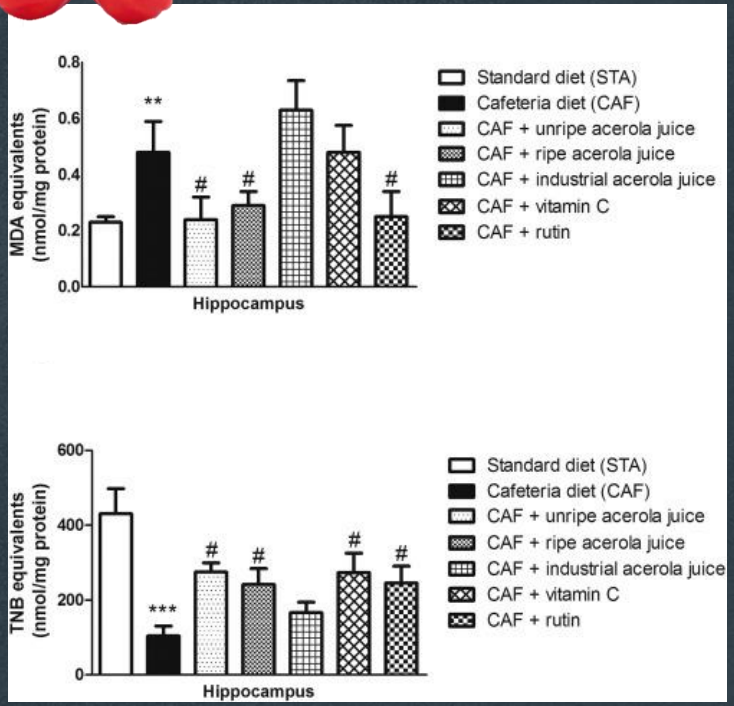



Lipid peroxidation in brain areas, particularly hippocampus, striatum, and prefrontal cortex, can contribute to insomnia, mood and neuronal death.

The results showed that mice with depressive-like behavior presented high levels of lipid peroxidation in the three examined brain areas. The hippocampus was the most affected, with about two times the levels of lipid peroxidation when compared to control values.
Despite this pronounced prooxidant state of the hippocampus, acai berry treatment totally reverted this scenario, eliminating the presence of lipid peroxidation products.

Souza-Monteiro, J.R., Arrifano, G.P., Queiroz, A.I.D., Mello, B.S., Custódio, C.S., Macêdo, D.S., Hamoy, M., Paraense, R.S., Bittencourt, L.O., Lima, R.R. and Burbano, R.R., 2019. Antidepressant and antiaging effects of açaí (Euterpe oleracea Mart.) in mice. *Oxidative Medicine and Cellular Longevity*, *2019*(1), p.3614960.

# Acerola reduces oxidation in brain




The mice were kept on their respective diet (standard control diet or cafeteria diet) for 13 weeks and treated with water; unripe acerola juice; ripe acerola juice; industrial acerola juice; 1 mg/kg/day of vitamin C; or 200 mg/kg/day of rutin.

In the hippocampus, unripe and ripe acerola juices and rutin significantly reduced the lipid peroxidation marker, malondialdehyde (MDA) levels.
Unripe and ripe acerola juices, vitamin C and rutin significantly enhanced the free sulfhydryl (SH) groups in relation to cafeteria diet group, which are responsible for reactive oxidative stress defence.

Thus, protecting the brain from oxidative damage.

Leffa, D.D., da Silva, J., Petronilho, F.C., Biélla, M.S., Lopes, A., Binatti, A.R., Daumann, F., Schuck, P.F. and Andrade, V.M., 2015. Acerola (Malpighia emarginata DC.) juice intake protects against oxidative damage in mice fed by cafeteria diet. *Food Research International*, 77, pp.649-656.

# Mixed Vegetables & Tomato vs Sleep

| | Normal sleepers (7-9h/day) | Short sleepers (<7h/day) | | Long sleepers (>9h/day) | |
|---|---|---|---|---|---|
| | Mean consumption g/day (95% CI) | Mean difference (95% CI) | *P*-values | Mean difference (95% CI) | *P*-values |
| **Green leafy vegetables** | 19.1 (18.6 to 19.6) | -1.5 (-2.8 to -0.1) | 0.023 | -4.4 (-7.7 to -1.2) | 0.003 |
| **Root vegetables** | 41.0 (39.9 to 42.2) | -3.5 (-6.5 to -0.5) | 0.014 | -1.4 (-8.6 to 5.8) | 1.00 |
| **Fruit vegetables (eg. Tomato)** | 154.9 (151.2 to 158.9) | -14.9 (-24.4 to -5.4) | <0.001 | -32.0 (-54.8 to -9.1) | 0.002 |

National FinHealth 2017 Study investigated the association of sleep duration with vegetables consumption in 5,043 adults. The results showed that normal sleepers had a significant higher consumption of vegetables when compared to both short and long sleepers. Notably, significant differences were noted for green leafy vegetables and fruit vegetables between normal and short sleepers, and between normal and long sleepers. Therefore, increasing consumption of green leafy vegetables and fruit vegetables can promote normal sleep patterns.

Thapa, A., Lahti, T., Maukonen, M. and Partonen, T., 2024. Consumption of fruits and vegetables and its association with sleep duration among Finnish adult population: a nationwide cross-sectional study. *Frontiers in nutrition*, *11*, p.1319821.

# Shoden® on Anxiety and Sleep Quality


Randomized placebo controlled double blinded studies had proven that Shoden® significantly reduced anxiety by 59% and reduced cortisol by 66% (stress hormone) in 60 healthy stressed adults after 60 days. Shoden® also increased sleep quality by 73% in 150 healthy adults for 6 weeks.

Mishra, D.N., & Kumar, M. (2024). Shoden promotes relief from stress and anxiety. Heylion, 10(17), e36885.
A randomized, double blind, placebo controlled study to evaluate the effects of ashwagandha (Withania somnifera) extract on sleep quality in healthy adults. Sleep Medicine. 2020 Mar 21