

# A Few "A,B,C's" of Herbs

V. Leigh Beasley, MD, FAAFP  
 APRN 2026 conference  
 Charleston, SC

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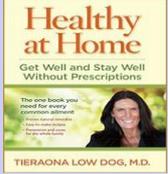
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## Thanks







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## Today's Objectives

<p>Ashwagandha</p> <p>Andrographis</p> <p>Bacopa</p> <p>Berberine</p> <p>Collagen</p>	<p>What are the traditional uses, what's the research saying, what are the possible uses today and the mechanisms, what's the pharmacology</p>
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No financial disclosures ☺

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### Ashwagandha (*Withania somnifera*)






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Ashwagandha (*Withania somnifera*)

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Ashwagandha (*Withania somnifera*)

- Calm, warming adaptogen
- “Somnifera”- “sleep bringing”-settles the mind, use in those with bad dreams/poor sleep/restless legs
- Use in folks who are “wired and tired” (wake up feeling exhausted)

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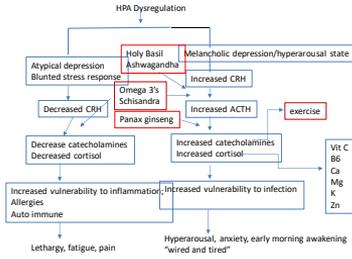
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**Biomedicine & Pharmacotherapy**  
 Withania somnifera (L.) Dunal (Ashwagandha): A comprehensive review on ethnopharmacology, pharmacotherapeutics, biomedical and toxicological aspects

**Withanolides**

**Used against**

- Alzheimer's disease, Parkinson's disease, Huntington's disease, stroke, insomnia, bipolar disorder, depression, stress, obsessive-compulsive disorder, schizophrenia, attention deficit hyperactivity disorder, asthma, cancer etc.

**Pharmacology**

- Anti-cancer, anti-inflammatory, apoptotic, immuno-modulatory, antimicrobial, anti-diabetic, hepatoprotective, hypoglycaemic, cardioprotective, spermatogenic etc.

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### Ashwagandha (*Withania somnifera*)

- Decreases ACTH/Decreases cortisol
- anti-inflammatory- eases aches and pains
- gastro protective/GABA –A binder (anxiolytic)



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### Ashwagandha



- Ashwagandha extract compared to placebo in 64 patients with chronic stress
- Study participants had serum cortisol measured and completed questionnaires about stress
- Group taking ashwagandha had a statistically significant reduction in scores on all stress-assessment scales AND had a statistically significant reduction in serum cortisol by day 60, relative to placebo

– Chandraskhar K, et al. A prospective, RDBPCT of safety and efficacy of a high concentration full-spectrum extract of ashwagandha root in reducing stress and anxiety in adults. *Indian J Psychol Med.* 2012;34(3):255-62

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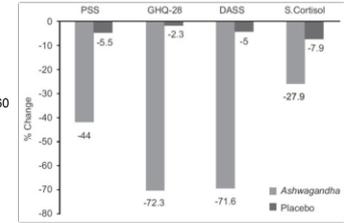
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Figure 1.

Graphs represents Percentage change From baseline to day 60



Percentage change from baseline in PSS, GHQ-28, DASS, Serum cortisol

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### Ashwagandha

- 3 studies looking at Ashwagandha and sleep
  - 8 week study where patients took 250 mg or 600 mg ashwagandha extract divided in 2 doses significantly improved sleep quality relative to baseline and better than placebo
  - 10 week study where patients had insomnia and anxiety and took 300 mg ashwagandha extract twice a day had improved sleep quality and anxiety symptoms improved compared to placebo
  - 12 weeks study with 50 patients age 65-80 years old took 600 mg/d of ashwagandha and had improvement in sleep quality and mental alertness in the morning compared to placebo

1. Salve J, et al. Cureus. 2019 Dec 25; 11(12)
2. Langade D, et al. Cureus 2019 Sep 28;11(9)
3. Kelgane SB, et al. Cureus 2020 Feb 23;12 (2)



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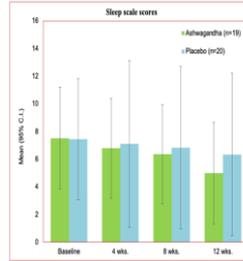


Figure 16, et al. Cureus 2020 Feb 23;12 (2)

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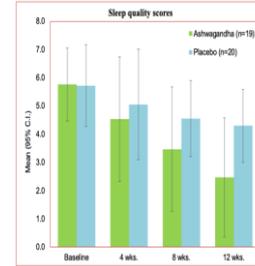


Figure 18, et al. Cureus 2020 Feb 23;12 (2)

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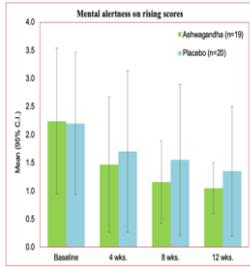
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Langford SL, et al. *Cortex* 2020;124:1-12

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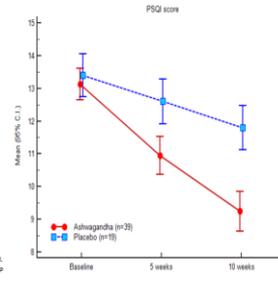
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Pittsburgh Sleep Quality Index  
7 areas ranked

(ex. Sleep latency, Sleep duration, sleep Disturbance, daytime Function)

Scores are 0-3 (none To severe) with lower Scores meaning Better sleep



Langford SL, et al. *Cortex* 2020;124:1-12

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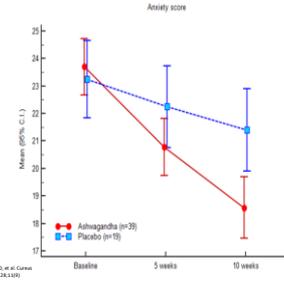
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Langford SL, et al. *Cortex* 2020;124:1-12

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## Ashwagandha



- The Perceived Impact of Ashwagandha on Stress, Sleep Quality, Energy, and Mental Clarity for College Students: qualitative Analysis of a Double-Blind Randomized Control Trial



– Baker Cynthia et al J Med Food. 2022 Dec;25(12):1095-1101 doi: 10.1089/jmf.2022.0042.

- 350 mg capsules twice a day (made by Gaia herb) for 30 days
- Daily check-in
- Focus groups
- Increased "perceived well being"- sustained energy, heightened mental clarity and enhanced sleep quality



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Review > Molecules. 2021 Dec 20;26(24):7696. doi: 10.3390/molecules26247696.

## Withaferin A: From Ancient Remedy to Potential Drug Candidate

Tahira Sultana <sup>1</sup>, Mohammad K Okla <sup>2</sup>, Madiha Ahmed <sup>1, 3</sup>, Nosheen Akhtar <sup>4</sup>, Abdulrahman Al-Hashimi <sup>2</sup>, Hamada Abdelgawad <sup>5</sup>, Ihsan-Ul- Haq <sup>1</sup>

Affiliations + expand

PMID: 34946778 PMCID: PMC8705790 DOI: 10.3390/molecules26247696



"anti-cancer, apoptotic"

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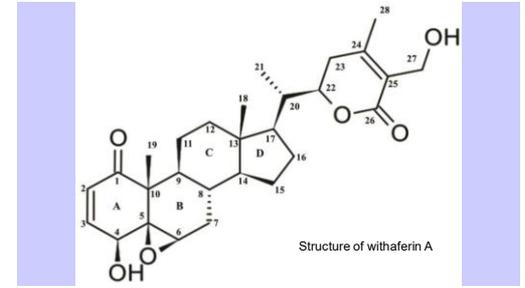
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**Table 4. Effect of Withanifera 250 mg, Withanifera 500 mg and Placebo on lipid profile after 12 weeks of treatment (All values expressed as Mean ± SD)**

Parameter	Withanifera 250mg (n=20)		Withanifera 500mg (n=20)		Placebo (n=20)	
	Pre treatment	Post treatment	Pre treatment	Post treatment	Pre treatment	Post treatment
Total Cholesterol (mg/dl)	174.9±32.97	160.3±33.32\$	186.8±39.31	158.0± 15.91\$*	177.2 ±22.73	190.3±22.47
HDL-C(mg/dl)	40.1± 5.08	40.5± 4.45 NS	40.20±7.46	45.31±5.44 \$0	37.9±5.44	37.4±5.90
LDL-C(mg/dl)	126.75±40.81	109.7±28.04#	138.9±16.50	96.25±21.13\$	125.3±38.79	136.05±44.16
Triglycerides (mg/dl)	170.2±42.28	147.4±38.59#	171.9±60.12	131.8± 46.24\$	166.5±16.62	170.3±17.09
VLDL-C(mg/dl)	32.45±7.27	31.20±7.62 NS	31.55±11.79	28.5±8.68 NS	29.25±6.70	29.0±7.19

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Review > Nutrients. 2025 Jun 27;17(13):2143. doi: 10.3390/nu17132143.

### Ashwagandha (*Withania somnifera*) and Its Effects on Well-Being-A Review

Michał Wiciński <sup>†</sup>, Anna Fajkiel-Madajczyk <sup>†</sup>, Józef Sławatycki <sup>†</sup>, Monika Szambelan <sup>†</sup>, Paweł Szyperki <sup>†</sup>, Paweł Wojciechowski <sup>†</sup>, Jakub Wojcicki <sup>†</sup>, Michał Gawryjolek <sup>‡</sup>

Affiliations + expand  
 PMID: 40647248 PMCID: PMC12252077 DOI: 10.3390/nu17132143

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Table 1.

Summary of research on the effects of ashwagandha on stress, anxiety and depression.

Characteristics of the Group and Duration of the Study	Daily Doses of Ashwagandha	Effect on Stress, Anxiety, and Depression	Study
	Extract		
60 stressed, healthy adults; 60 days	240 mg	Reducing feelings of anxiety and stress.	[16]
54 stressed, healthy adults; 60 days	500 mg	Reducing feelings of anxiety and stress.	[17]
60 healthy college students aged 18-50; 30 days	700 mg	Enhancing sleep, boosting energy, and improving mental clarity.	[18]
		No effect on stress over 30 days of follow-up.	[19]
120 overweight or mildly obese men and women aged 40-75 years; 12 weeks	400 mg	No reduction in the level of stress.	[8]
52 adults aged 18-60; 8 weeks	300 mg	Stress reduction, weight loss, and cortisol level reduction.	[20]
90 adults; 8 weeks	125, 250, and 500 mg	Reduction in mild to moderate stress regardless of dose.	[2]

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**Nutrition Facts**  
**Supplement Facts**  
 1 capsule contains:  
 KSM-66 Ashwagandha (root extract) 300mg  
 —(Withania somnifera)  
 Other Ingredients: Cellulose, magnesium stearate (vegetable source) and silicon dioxide. Capsule consists of hydroxypropylmethylcellulose.  
 Contains NO: wheat, no gluten, no soybeans, no dairy, no egg, no fish/shellfish, no peanuts/tree nuts. Vegan. Non-GMO.  
 NOTE: Color varies due to nature of material.  
 Recommended Use:  
 Adults: Take 1 capsule 1 to 2 times per day with water, or as directed by your qualified healthcare professional.

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## Ashwagandha Tonic Tea

- 1-2 tsp powdered Ashwagandha
- 2 cups milk (dairy or soy)
- 1 Tbsp Raw sugar
- 1/8 tsp cardamom

– Simmer the ashwagandha in milk on low heat for 15 minutes. Add the sugar and cardamom and stir until well mixed. Turn off heat. Drink 1 cup 1-2 times/day

– Tieraona LowDog MD, 2010 "Adaptogen-Nervine. Brief Materia Medica"

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## Paleo Ashwagandha Chocolate Chai Bites

**Ingredients:**

- 1/3 cup organic tahini
- 1/4 cup + 1 Tbsp. organic almond butter (or nut butter of your choice)
- 1/4 cup + 2 Tbsp. raw, local honey
- 1/4 cup fair trade, organic dark chocolate, chopped
- 2 Tbsp. [organic ashwagandha powder](#)
- 2 Tbsp. [organic cacao powder](#) (plus more as needed)
- 2 Tbsp. [organic hemp seeds](#)
- 1 tsp. [organic cinnamon powder](#)
- 1 tsp. [organic ginger powder](#)
- 1 tsp. [organic cardamom powder](#)
- 1 tsp. [organic nutmeg powder](#)
- 1/2 tsp. [organic vanilla extract](#) (optional)

**Toppings:**

- [Organic hemp seeds](#)
- [Organic coconut flakes](#)



<https://youtube/RuDjwOoZYhk>

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### Ashwagandha

- Good safety data- most studies use 200-300 mg SE twice daily
- Could have some MILD stimulation of thyroid hormone
- NO significant herb-drug interactions (in human pharmacokinetic studies)
- Adaptogen
- May have anxiolytic effects and mild GABAergic function
- Standardized to withanolides
- Has antioxidant/anti-inflammatory properties
- Quieting/calming

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### Andrographis (*Andrographis paniculata*)



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*Andrographis (Andrographis paniculata)* in the acanthus family (Acanthaceae) is an erect, branched annual, 1-3' tall with small pink or white flowers with brown or purple spots. Native to the Indian subcontinent, the aerial parts have many uses, including treating chronic and intermittent fever, sore throat, malaria, inflammation, cough, bronchitis, skin diseases, intestinal worms, dyspepsia, flatulence, colic, colitis, diarrhea, dysentery, urinary infection, and hemorrhoids.

Accessed from Herbalgram.org Jan. 2026

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**Brand Name**



**Common Names**

- Indian Echinacea
- Chuan Xin Lian
- Charetta
- Kalmegh

**Brand Name**

- Kan Jang, Kold
- Kare, KalmCold, Paractin

<https://www.mskcc.org/cancer-care/integrative-medicine/herbs/andrographis>

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**APJND**  
Asian Pacific Journal of Tropical Disease

Asian Pac J Trop Dis. 2014 Jun;4(3):213-222. doi: 10.1016/S2222-1808(14)60509-0

**Harnessing the medicinal properties of *Andrographis paniculata* for diseases and beyond: a review of its phytochemistry and pharmacology**

[Agbonlahor Okhuarobo](#)<sup>1</sup>, [Joyce Ehiogwe Falodun](#)<sup>2</sup>, [Osayemwenre Eharud](#)<sup>3\*</sup>, [Vincent Imieje](#)<sup>1</sup>, [Abiodun Falodun](#)<sup>3,4\*</sup>, [Peter Langer](#)<sup>1</sup>

Reviewed by Ifitkhar Ali Assistant Professor<sup>6</sup>

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**Andrographis (*Andrographis paniculata*) "King of Bitters"**



**Traditional uses:**

- Cancer
- Diabetes
- High blood pressure
- Ulcer
- Bronchitis
- Fevers
- Snake bite and poisonous stings of some insects
- Skin diseases
- Flatulence
- Colic
- Influenza
- Dysentery
- Dyspepsia
- Malaria
- leprosy

Aerial parts, roots and whole plant have been used

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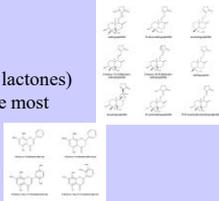
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## Andrographis (*Andrographis paniculata*)

### Phytochemistry:

- Terpenoids
  - (entalabdane diterpene lactones)
  - -Andrographolide is the most prominent
- Flavonoids (flavones)



Anti-microbial, anti-viral, Anti-oxidant, cytotoxicity, anti-protozoan, anti-inflammatory, immunostimulant, anti-diabetic, anti-infective...

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## Anti-microbial/anti-fungal

Sample	Zone of inhibition diameter (mm)				
	<i>Bacillus subtilis</i>	<i>Staphylococcus aureus</i>	<i>Escherichia coli</i>	<i>Pseudomonas aeruginosa</i>	<i>Candida albicans</i>
AE	16.3 ± 0.58	- <sup>b</sup>	18.3 ± 0.335	19.3 ± 0.335	18.3 ± 0.335
AGPs <sup>a</sup>	14.0 ± 1.00	- <sup>b</sup>	16.0 ± 1.00	17.6 ± 0.34	15.6 ± 0.34
AND <sup>a</sup>	13.0 ± 1.00	- <sup>b</sup>	- <sup>b</sup>	- <sup>b</sup>	14.6 ± 0.34
(extracted)					
Ref	Streptomycin	Streptomycin	Gentamycin	Gentamycin	Nystatin
	20.0 ± 1.00	20.0 ± 1.00	22.0 ± 1.00	24.0 ± 1.00	19.0 ± 1.00

Ref=reference disc tested at 100 µg/disc (used as positive control).

<sup>a</sup> Results are mean ± S.D. values of three replicates, 10 mg/disc.

<sup>b</sup> No activity (diameter of the inhibition zone less than 10 mm).  
 AE-aqueous extract  
 AND-andrographalides fraction  
 AGP-arabinogalactan proteins

Prajul K. Singha, S. Roy, S. Dey. Antimicrobial activity of *Andrographis paniculata*. Fitoterapia, Volume 74, Issues 7-8, 2003, Pages 692-694, ISSN 0924-6460, [https://doi.org/10.1016/S0924-6460\(03\)00159-X](https://doi.org/10.1016/S0924-6460(03)00159-X), <https://www.sciencedirect.com/science/article/pii/S092464600300159X>

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## RCT trials



. A total of 223 patients of both sexes were randomized in two groups which received either KalmCold (200 mg/day) or placebo in a double blind manner. In both the treatments, mean scores of all symptoms showed a decreasing trend from day 1 to day 3

From day 3 to day 5 most of the symptoms in placebo treated group either remained unchanged (cough, headache and earache) or got aggravated (sore throat and sleep disturbance) whereas in KalmCold treated group all symptoms showed a decreasing trend

Saxena RC, Singh R, Kumar P, Yadav SC, Negi MP, Saxena VS, Joshua AJ, Vijayabalan J, Goudar KS, Venkateshwarlu K, Anil A. A randomized double blind placebo controlled clinical evaluation of extract of *Andrographis paniculata* (KalmCold) in patients with uncomplicated upper respiratory tract infection. *Phytomedicine*. 2010 Mar;17(3-4):178-85. doi: 10.1016/j.phymed.2009.12.001. Epub 2010 Jan 25. PMID: 20092985.

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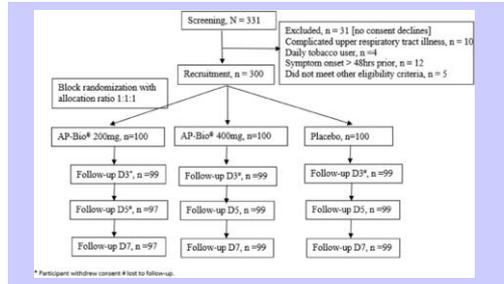
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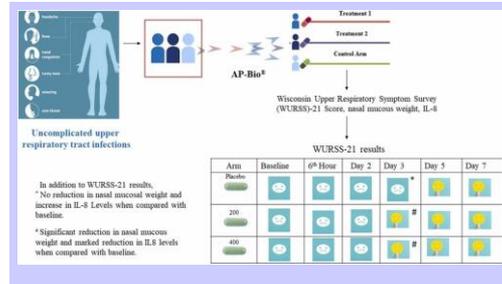
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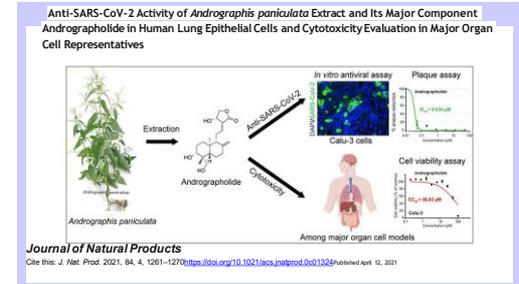
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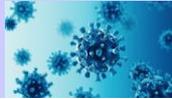
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### Efficacy of *Andrographis paniculata* extract treatment in mild to moderate COVID-19 patients being treated with favipiravir: A double-blind, randomized, placebo-controlled study



Siripongboonsitti et al. Phytomedicine Volume 119, October 2023  
<https://doi.org/10.1016/j.phymed.2023.115018>



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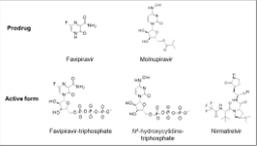
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**Risk/Benefit Profiles of Currently Approved Oral Antivirals for Treatment of COVID-19: Similarities and Differences**  
 by Suzana Corriton<sup>1</sup>, Nikolay Savchuk<sup>2</sup> and C. David Pausa<sup>2\*</sup>

<sup>1</sup> Corifori Consulting, Inc., San Clemente, CA 92672, USA  
<sup>2</sup> Viron, Inc., 12760 High Bluff Drive Suite 300, San Diego, CA 92130, USA  
 \* Author to whom correspondence should be addressed.

COVID 2022, 2(8), 1057-1076; <https://doi.org/10.3390/covid2080076>  
 Submission received: 24 May 2022 / Revised: 13 July 2022

**Favipiravir (AVIFAVIR, AVIGAN, and FABIFLU)  
 Molnupiravir (Lagevrio)  
 Nirmatrelvir and Ritonavir (Paxlovid)**



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**Efficacy of *Andrographis paniculata* spray in acute pharyngitis: A randomized controlled trial**

[Risa Okonogi](#), [Vich Thampanya](#), [Siriporn Okonogi](#)

Keywords: *Andrographis paniculata*, acute viral pharyngitis, sore throat, plant extract, spray

2023 Volume 17 Issue 5 Pages 340–345 DOI <https://doi.org/10.5582/ddt.2023.01053>

**-60 patients with acute viral pharyngitis  
 -Compared A. paniculata spray vs chamomile spray (positive control)  
 -Both groups had significant reduction in the severity of all signs and symptoms (throat pain, difficulty swallowing and coughing)  
 the A. paniculata spray group had a slightly faster recovery than the chamomile group**



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**Bacopa**



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## Bacopa (Brahmi)



- Ayurvedic medicine/Traditional uses
  - Class of herbs to improve mental health, intellect and memory
  - Used for anxiety, insomnia, depression, anti-epileptic
- Primary activity thought to be a group of saponins called bacosides
  - These increase production of neurotransmitter acetylcholine, serotonin and GABA (gamma amino butyric acid)
- Classified as Class 1 “very safe”
- Usual dosage of the SE in 200-600 mg in 2 divided doses (standardized to 20% Bacosides A and B)

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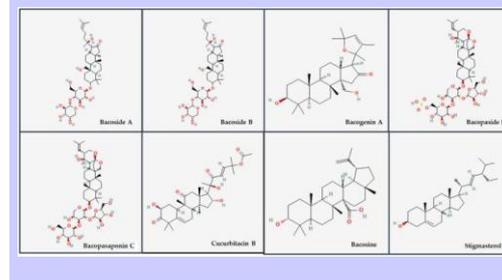
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## Bacopa monnieri



- Studies in rats comparing it to lorazepam
- Studies in adults have shown improvement in memory and cognitive function
  - Bhattacharya et al. Anxiolytic activity of a SE of Bacopa monnieri: an experimental study *Phytomedicine* **1998** Apr; 5(2):77-82
  - Pase, et al. The cognitive enhancing effects of Bacopa monnieri: a systematic review of randomized controlled human clinical trials *J Altern Complement Med* **2012** Jul;18 (7): 647-52
  - Aguiar et al Neuropharmacological Review of Nootropic Herb Bacopa monnieri [www.ncbi.nlm.gov/pmc/articles/PMC3746283/#B133](http://www.ncbi.nlm.gov/pmc/articles/PMC3746283/#B133)

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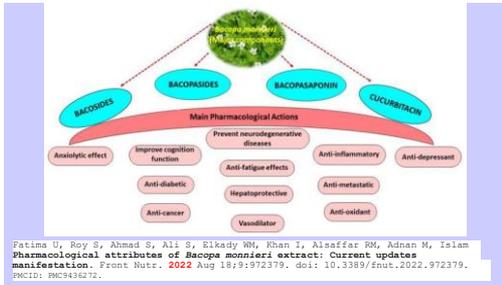
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## Bacopa monnieri

Studies in cell lines and animal models

- Anti-cancer (breast, colon, liver, glioblastoma, neuroblastoma) blocks AQP1 (aquaporin) which contributes to tumor progression in above cell lines
- Diabetes
- Parkinson's disease
- Alzheimer's



Fatima U, Roy S, Ahmad S, Ali S, Elkady NM, Khan I, Alsaifan RM, Adnan M, Islam A, Hassan MI. **Pharmacological attributes of *Bacopa monnieri* extract: Current updates and clinical manifestation.** Front Nutr. 2022 Aug 18;9:972379. doi: 10.3389/fnut.2022.972379. PMID: 36061899; PMCID: PMC9436272.

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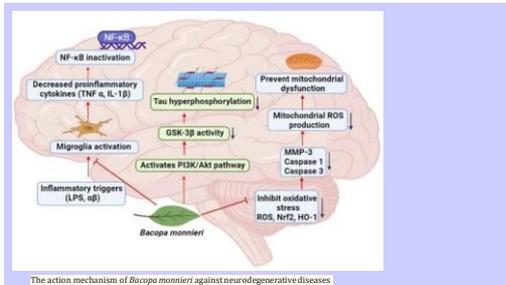
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### Bacopa monnieri- Clinical Trials



- ◆ 17 healthy adults ages 18-44
- ◆ MTF (Letter search, Stroop task, mental arithmetic, visual tracking)
- ◆ 4 sessions, one week apart, testing at 1 and 2 hours post-treatment
- ◆ Performance on overall MTF score not significantly different
- ◆ Study showed improved performance of the Stroop and Letter search task and reduces stress related cortisol levels

- Benson S, et al. Phytother Res **2014**; 28(4):551-9



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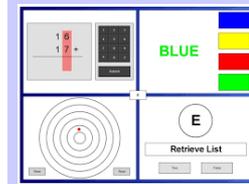
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MTF-Multitasking Framework

- Mental arithmetic: add a series of numbers
- Stroop task- color names are presented in different color fonts
- Visual tracking- dot moves outward from the center through 5 concentric circles-let the dot travel as far from the center as possible but not touch the edge of the outermost circle before hitting reset
- Letter search- given 4 letters in the initial 4 seconds of testing and at 10 second intervals a single letter appears and participant responds if it was in the initial 4 letters given

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### Bacopa monnieri- Clinical Trials

#### Efficacy of Standardized Extract of *Bacopa monnieri* (Bacognize®) on Cognitive Functions of Medical Students: A Six-Week, Randomized Placebo-Controlled Trial

60 second year medical students

*Bacopa monnieri* (Bacognize) 150 mg twice daily vs placebo for 6 weeks  
Inclusion and exclusion criteria- no alcohol, tobacco or memory improving medications

**Results.** Statistically significant improvement was seen in the tests relating to the cognitive functions with use of *Bacopa monnieri*. Blood biochemistry also showed a significant increase in serum calcium levels (still within normal range).

Evid Based Complement Alternat Med. 2016 Oct 10;2016:4103423. doi: 10.1155/2016/4103423

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Neuropsychological task	Bacopa group (n = 28)		Placebo group (n = 14)		*p* value
	Before drug	After drug	Before drug	After drug	
Digit span forwards	7.23 ± 1.11	7.85 ± 0.83	7.83 ± 1.19	7.73 ± 0.23	>0.05
Digit span backwards	8.1 ± 1.3	8.3 ± 0.9	9.1 ± 1.0	8.3 ± 0.8	<0.05*
Paired associate task	8 ± 1.3	7.7 ± 1.4	8.1 ± 1.1	7.9 ± 1.3	>0.05
Logical memory test	3.4 ± 2.6	5.2 ± 4.5	5.5 ± 2.6	4.1 ± 3.8	<0.05*
Memory span for nonsense syllables	5.4 ± 3.3	6.9 ± 2.4	4.7 ± 2.3	6.1 ± 2.9	>0.05
Finger tapping test	152.28 ± 15.75	154.56 ± 13.71	157.60 ± 14.89	158.48 ± 27.89	>0.05
Simple reaction time	221.80 ± 53.17	221.01 ± 52.16	213.13 ± 33.6	212.49 ± 33.62	>0.05
Choice reaction time	350.07 ± 52.08	340.03 ± 62.26	342.39 ± 67.54	340.95 ± 64.45	>0.05
Choice discrimination test	383.70 ± 52.54	387.06 ± 53.47	374.02 ± 51.46	379.44 ± 58.32	>0.05
Digit picture substitution test	1492.69 ± 368.58	1467.78 ± 556.55	1465.94 ± 293.94	1325.44 ± 207.07	>0.05

Effect of *Bacopa monnieri* (300 mg/day) on neuropsychological tests (mean scores ± SD).

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Neuropsychological task	Bacopa group (n = 28)		Placebo group (n = 14)		*p* value
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Digit span backwards	8.1 ± 1.3	8.3 ± 0.9	9.1 ± 1.0	8.3 ± 0.8	<0.05*
Paired associate task	8 ± 1.3	7.7 ± 1.4	8.1 ± 1.1	7.9 ± 1.3	>0.05
Logical memory test	3.4 ± 2.6	5.2 ± 4.5	5.5 ± 2.6	4.1 ± 3.8	<0.05*
Memory span for nonsense syllables	5.4 ± 3.3	6.9 ± 2.4	4.7 ± 2.3	6.1 ± 2.9	>0.05
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Digit picture substitution test	1492.69 ± 368.58	1467.78 ± 556.55	1465.94 ± 293.94	1325.44 ± 207.07	>0.05

Effect of *Bacopa monnieri* (300 mg/day) on neuropsychological tests (mean scores ± SD).

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The Journal of Alternative and Complementary Medicine, Vol. 16, No. 7  
 Research Article  
 Full access  
 Published Online: 20 July 2010

2010

**Does *Bacopa monnieri* Improve Memory Performance in Older Persons? Results of a Randomized, Placebo-Controlled, Double-Blind Trial**

Authors: [Samer Hagege](#) and [John Steiner](#) [Authors Info & Affiliations](#)  
 Publication: The Journal of Alternative and Complementary Medicine  
<https://doi.org/10.1089/acm.2009.0342>

Avg age 65 (55-86)

BacoMind™

**Results:** One hundred and thirty-six (136) subjects volunteered; 103 met entry criteria, 98 commenced, and 81 completed the trial. *Bacopa* significantly improved verbal learning, memory acquisition, and delayed recall as measured by the AVLT: trial a4 ( $p = 0.000$ ), trial a5 ( $p = 0.016$ ); trial a6 ( $p = 0.000$ ); trial a7 (delayed recall) ( $p = 0.001$ ); total learning ( $p = 0.011$ ); and retroactive interference ( $p = 0.048$ ). CFT, MAC-Q, and TMT scores improved but group differences were not significant. *Bacopa* versus placebo caused gastrointestinal tract (GIT) side-effects.

**Conclusions:** *Bacopa* significantly improved memory acquisition and retention in healthy older Australians. This concurs with previous findings and traditional use. *Bacopa* caused GIT side-effects of increased stool frequency, abdominal cramps, and nausea.

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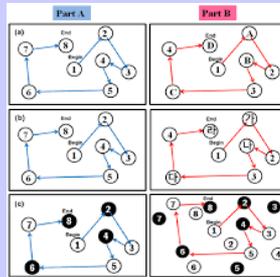
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## Trail Making test



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### The Effects of a Bacopa monnieri Extract (Bacumen®) on Cognition, Stress, and Fatigue in Healthy Adults: A Randomized, Double-Blind, Placebo-Controlled Trial

A.L. Lopresti <sup>1</sup>, S.J. Smith <sup>2</sup>; PMID: 41091332 DOI: 10.1007/s40261-025-01492-1 [Clin Drug Invest](#) 2025, **00**(0):000

- 87 participants ages 40-70 (from 101 who started the study)
- 12 weeks taking BME (Bacumen) vs placebo
- Primary outcome measures-verbal learning, attention and working memory
- Secondary outcome measures-self reports of memory, mood and fatigue
- No difference in primary outcome measures-
- However, in the Bacopa-supplemented participants, there were greater reductions in overall self-reported stress reactivity ( $p = 0.03$ ); and fatigue and stress levels after exposure to a cognitive-demanding computer task (secondary outcome measures).

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• Nutrients. 2025 Jun 5;17(11):1939. doi: 10.3390/nu17111939 [0](#)

### Bacopa monnieri: Preclinical and Clinical Evidence of Neuroactive Effects, Safety of Use and the Search for Improved Bioavailability

Anna Gościńskiak <sup>1</sup>, Anna Stasiłowicz-Krzemiński <sup>1</sup>, Marta Szeląg <sup>2</sup>, Jakub Pawlak <sup>2</sup>, Izabela Skiera <sup>2</sup>, Hanna Kwiatkowska <sup>2</sup>, Natasza Nowak <sup>2</sup>, Krzysztof Bernady <sup>2</sup>, Piotr Trzaskoma <sup>2</sup>, Oskar Zimak-Króćkonad <sup>2</sup>, Judyta Cielecka-Piontek <sup>1,3,\*</sup>

Editor: Robert M Hackman

• [Author information](#) • [Article notes](#) • [Copyright and License information](#)  
PMCID: PMC12158153 PMID: 40507208

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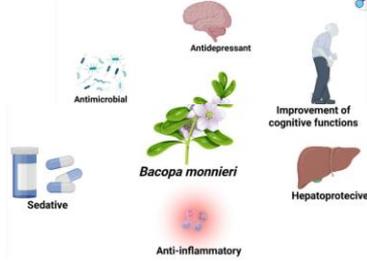
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Figure 1. Schematic representation of the main neuropharmacological effects of *Bacopa monnieri*.



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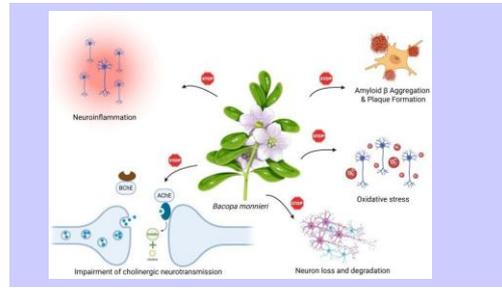
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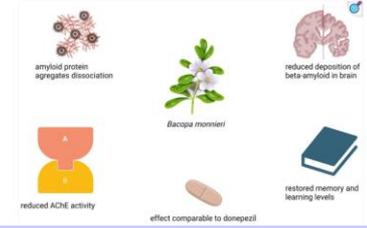
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Figure 5.



Schematic representation of the effects of *Bacopa monnieri* in patients with Alzheimer's disease.

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## Bacopa

- Increases GABA (anxiolytic)
  - Doesn't alter motor ability (like benzos do)
- Increases serotonin (antidepressant)
- Neuroprotective (anti-inflammatory for the brain)
- Adult dosage 300 mg/d
- Children dosage 200 mg/d
- Good for folks with "mental exhaustion"



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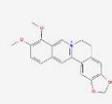
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## Berberine

- Isoquinoline alkaloid
- Compound found in several plants
  - Barberry (*Berberis vulgaris*)
  - Goldenseal (*Hydrastis canadensis*)
  - Oregon Grape (*Berberis aquifolium*)
  - Coptis/Goldthread (*Coptis chinensis*)
  - Tree turmeric (*Berberis aristata*)
- Used for centuries in TCM and Ayurvedic medicine




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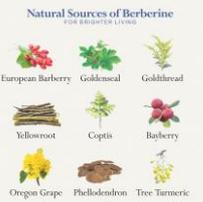
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### Natural Sources of Berberine

From Berberis (Celastraceae)



S.No.	Scientific name of plant	Common name of plant	Plant part	Reference
1	<i>Agave americana</i>	Prickly pears	Leaves	(Shi et al., 2013)
2	<i>Berberis aristata</i>	Tree turmeric	Bark	(Shankar et al., 2012)
3	<i>Berberis chinensis</i>	Goldthread	Bark	(Kumar et al., 2014)
4	<i>Berberis cuneata</i>	Indian barberry	Root	(Khan et al., 2012)
5	<i>Berberis empetrifolia</i>	Tree turmeric	Bark	(Kumar et al., 2014)
6	<i>Berberis aquifolium</i>	Oregon grape	Bark	(Shi et al., 2013)
7	<i>Berberis darwinii</i>	Small barberry	Bark	(Shi et al., 2013)
8	<i>Berberis empetrifolia</i>	Tree turmeric	Leaves and stem	(Shi et al., 2013)
9	<i>Berberis hanceana</i>	Chinese barberry	Bark	(Shi et al., 2013)
10	<i>Berberis pinnatifida</i>	Checker	Bark	(Shi et al., 2013)
11	<i>Berberis pinnatifida</i>	Small barberry	Bark	(Shi et al., 2013)
12	<i>Berberis pinnatifida</i>	Yellow root of barberry	Bark	(Shi et al., 2013)
13	<i>Coptis chinensis</i>	Chinese goldthread	Root	(Shi et al., 2013)
14	<i>Coptis japonica</i>	Japanese goldthread	Root	(Shi et al., 2013)
15	<i>Eucommia ulmoides</i>	Castanopsis genus	Root	(Shi et al., 2013)
16	<i>Hydrastis canadensis</i>	Goldenseal	Root	(Shi et al., 2013)
17	<i>Berberis aquifolium</i>	Oregon grape	Bark	(Korolik et al., 1981)
18	<i>Phellodendron amurense</i>	Amur cork tree	Bark	(Shi et al., 2013)
19	<i>Passiflora foetida</i>	Passiflora	Bark	(Shi et al., 2013)
20	<i>Berberis aristata</i>	Tree turmeric	Fruit	(Shi et al., 2013)
21	<i>Berberis empetrifolia</i>	Tree turmeric	Bark	(Shi et al., 2013)
22	<i>Berberis empetrifolia</i>	Tree turmeric	Bark	(Shi et al., 2013)
23	<i>Berberis empetrifolia</i>	Tree turmeric	Bark	(Shi et al., 2013)
24	<i>Berberis empetrifolia</i>	Tree turmeric	Bark	(Shi et al., 2013)

**BERBERINE AND ITS PHARMACOLOGY POTENTIAL-A REVIEW**  
 Pappiah B. I., Rajan N. J., Gopalan TS.,  
 Shanmukappa B. Kagnelli\*, Kartikayyan M. 4, Ashok G. 4,  
 Rangsh MS. 4, Sureshan V. 5 and Kanchesh M. Bhoolagipppa\*

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### Berberine

#### Traditional uses

Treating infections  
(bacterial, viral, fungal)  
Wound healing  
GI disorders

#### Today

Diabetes  
Cholesterol  
High blood pressure  
Canker sores  
Weight loss

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### Berbine

#### Activates AMPK

- Activated protein kinase or 5 adenosine monphosphate activated protein kinase
- Enzyme that plays central role in cellular metabolism when cellular energy is low
- AMPK activation results in increased uptake of glucose from the blood to the target organ
- Inhibits accumulation of fat by modulating acetyl CoA carboxylase

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### Therapeutic Relevance

- Diabetes & Obesity: AMPK activation improves glucose uptake and lipid profiles, making it a target for drugs like metformin.
- Cancer: Its role in halting energy-intensive processes makes it relevant in cancer therapy.
- Aging: By promoting autophagy, it's considered a potential longevity factor.

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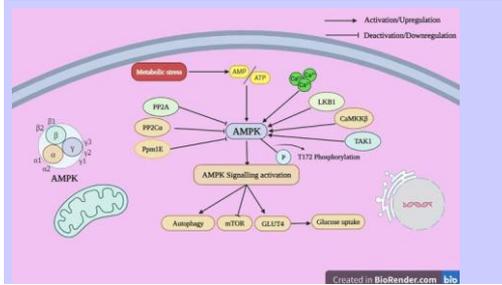
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HOME > DIET & NUTRITION > DIETS & WEIGHT LOSS

## Is Berberine Really “Nature’s Ozempic”?

*I've been reading and seeing videos on social media about the supplement berberine being effective for both weight loss and diabetes. Does it work, and is it safe?*

ANDREW WEIL, M.D. | OCTOBER 2, 2023

Berberine works differently than GLP-1 medications  
Accessed from Drweil.com Jan 2026

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Pharmacological Research  
Volume 155, May 2020, 104722

Review

# Berberine pharmacology and the gut microbiota: A hidden therapeutic link

Solomon Habtemariam

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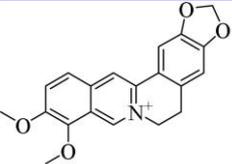
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Berberine



Berberine hydrochloride powder

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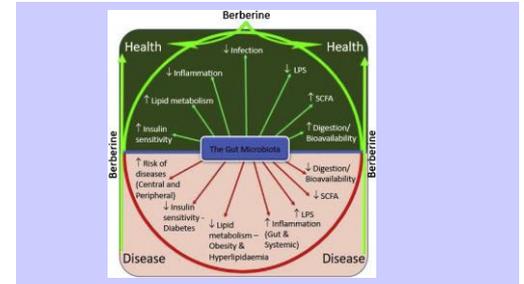
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**frontiers**  
in Cellular and Infection Microbiology

• Front Cell Infect Microbiol. 2021 Feb 19;10:588517. doi: [10.3389/fcimb.2020.588517](https://doi.org/10.3389/fcimb.2020.588517)

**Effects of Berberine on the Gastrointestinal Microbiota**

Lichao Zhang <sup>1,2,3,\*</sup>, Xiaoying Wu <sup>1,2,4,\*</sup>, Ruihui Yang <sup>5</sup>, Fang Chen <sup>6</sup>, Yao Liao <sup>1,2,3</sup>, Zifeng Zhu <sup>1,2,3</sup>, Zhongdao Wu <sup>1,2,3</sup>, Xi Sun <sup>1,2,3</sup>, Lifu Wang <sup>1,2,3</sup>\*

• Author information • Article notes • Copyright and License information

PMCID: PMC7933196 PMID: 33680978

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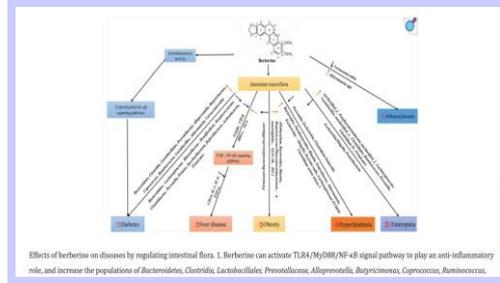
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**molecules**

• Molecules. 2022 Jul 15;27(14):4523. doi: [10.3390/molecules27144523](https://doi.org/10.3390/molecules27144523)

**Anticancer Effects and Mechanisms of Berberine from Medicinal Herbs: An Update Review**

Buo-Gu Xiong <sup>1</sup>, Si-Yu Huang <sup>1</sup>, Si-Xia Wu <sup>1</sup>, Dan-Dan Zhou <sup>1</sup>, Zhi-Jun Yang <sup>1</sup>, Adila Saimanti <sup>1</sup>, Cai-Ning Zhao <sup>2</sup>, Ao Shang <sup>3</sup>, Yun-Jian Zhang <sup>4</sup>, Ben-You Gan <sup>5</sup>, Hua-Rin Li <sup>1,\*</sup>

Editor: Claudio Ferrante

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PMCID: PMC9316001 PMID: 35893396

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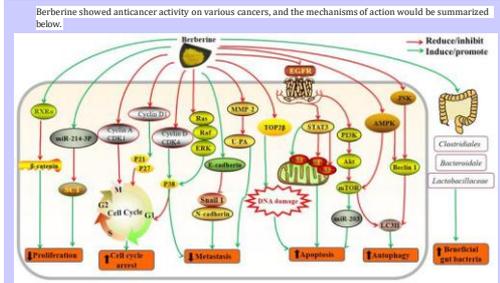
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### Berberine- final thoughts

Don't give to infants (can raise bilirubin)  
 Not studied in pregnancy or breastfeeding  
 Need more clinical studies

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### Collagen

Skin aging  
 Reduced production of fibroblasts  
 Increased expression of matrix metalloproteinases which leads to degradation of collagen and elastin fibers (dryness, laxity and wrinkles)

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UPMC UNIVERSITY OF PITTSBURGH MEDICAL CENTER      UNIVERSITY OF PITTSBURGH

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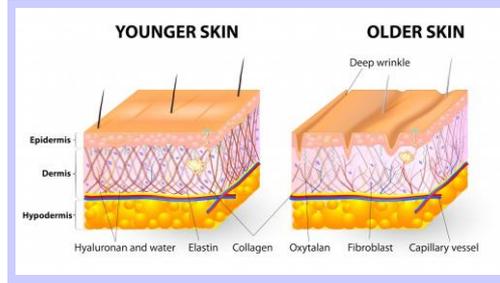
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## Collagen

- Most abundant protein in the body
- Hydrolyzed collagen (collagen peptides) -created from breaking down whole collagen proteins (usually bovine (cow) or marine (fish) into smaller peptides by a process called hydrolysis to help with absorption
- Type II collagen is the main structural collagen in cartilage

**Collagen Structure**

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## Can you take both?? Should you??

What's the Big Difference?		
Feature	Hydrolyzed Collagen	Type II Collagen (Undenatured)
Source	Bovine/Marine	Usually Chicken Sternum
Structure	Broken into peptides	Intact protein
Dose	Grams per day	Milligrams per day
Primary Benefit	Skin, bones, general collagen support	Joint comfort, mobility
Mechanism	Supplies amino acids	Modulates immune response

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• J Clin Med. 2024 Sep 11;13(18):5370. doi: [10.3390/jcm13185370](https://doi.org/10.3390/jcm13185370) [ORCID](#)

**The Efficacy and Safety of CollaSel Pro® Hydrolyzed Collagen Peptide Supplementation without Addons in Improving Skin Health in Adult Females: A Double Blind, Randomized, Placebo-Controlled Clinical Study Using Biophysical and Skin Imaging Techniques**

[Devrim Demir-Düğü](#)<sup>1,2,3</sup>, [Ljiljana Čerjavić](#)<sup>4</sup>, [Yilmaz Yıldırım](#)<sup>4</sup>, [Onur Yılmaz](#)<sup>5</sup>, [Beyza Avcı](#)<sup>6</sup>, [Riase Yılmaz](#)<sup>4</sup>, [Emel Dowan Kurtulu](#)<sup>6</sup>, [Ayşe Ekman](#)<sup>7</sup>, [Selim Tazman](#)<sup>7</sup>, [Hüseyin Serhat İnaloz](#)<sup>4</sup>, [Aydin Errememisioğlu](#)<sup>4\*</sup>

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PMCID: PMC11432272 PMID: [39336856](https://pubmed.ncbi.nlm.nih.gov/39336856/)

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• 2024 Sep 11;13(18):5370. doi: [10.3390/jcm13185370](https://doi.org/10.3390/jcm13185370)

**The Efficacy and Safety of CollaSel Pro® Hydrolyzed Collagen Peptide Supplementation without Addons in Improving Skin Health in Adult Females: A Double Blind, Randomized, Placebo-Controlled Clinical Study Using Biophysical and Skin Imaging Techniques**

- The study was based on five consecutive visits, including a baseline visit (day 0), the treatment period visits (week 1, week four, and week 8), and the end of the study (EOS) visit (week 12; 4 weeks after the 8-week-use of test product or placebo).
- 112 women
- ages 35-57 (mean age 44.4 years)
- The mean BMI was 25.5 kg/m<sup>2</sup> (SD 3.8, range 18.8 to 36.2 kg/m<sup>2</sup>)
- (n = 57; a single oral dose of 10 g CollaSel Pro® hydrolyzed collagen peptide) (placebo group; n = 55; oral maltodextrin) daily for 8 weeks

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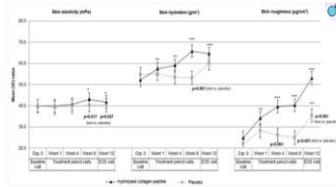
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Figure 2.



Skin elasticity (mPa), skin hydration ( $\mu\text{g}/\text{m}^2$ ), and skin roughness ( $\mu\text{g}/\text{cm}^2$ ) values in test product and placebo groups during the study period. \*  $p < 0.05$ , \*\*  $p < 0.01$  and \*\*\*  $p < 0.001$  compared to baseline measurement in each group.

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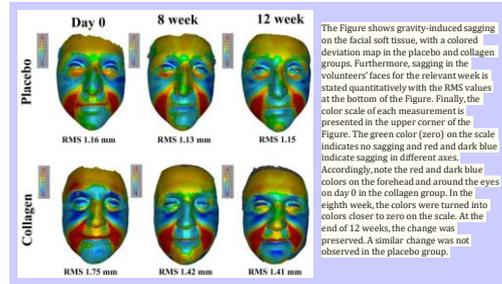
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The Figure shows gravity-induced sagging on the facial soft tissue, with a colored deviation map in the placebo and collagen groups. Furthermore, sagging in the volunteers' faces for the relevant week is stated quantitatively with the RMS values at the bottom of the Figure. Finally, the color scale of each measurement is presented in the upper corner of the Figure. The green color (zero) on the scale indicates no sagging and red and dark blue indicate sagging in different axes. Accordingly, note the red and dark blue colors on the forehead and around the eyes on day 0 in the collagen group. In the eighth week, the colors were turned into colors closer to zero on the scale. At the end of 12 weeks, the change was preserved. A similar change was not observed in the placebo group.

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The significant decrease in RMS values (indicating a decrease in sagging of facial soft tissue caused by gravity) was noted at week eight compared to baseline (1.02 (0.21) vs. 1.10 (0.21) mm,  $p = 0.012$ ) in the test product (CollaSel Pro<sup>®</sup> hydrolyzed collagen peptide) group. **BUT (otherwise known as limitations of the results 😊)**

Three-dimensional surface analysis was available for 28 females in the test product group and 25 in the placebo group.

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### Other Collagen Products used in studies (with similar results)

- Pure Gold Collagen® (type 1 hydrolyzed collagen product extracted from fish)
- BioCell Collagen® (type II hydrolyzed collagen)
- Verisol ®(type I porcine hydrolyzed collagen)
- Vinh Wellness Collagen® (hydrolyzed marine collagen)

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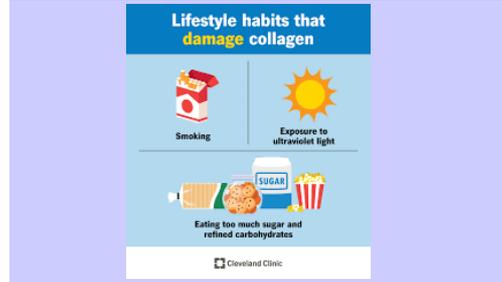
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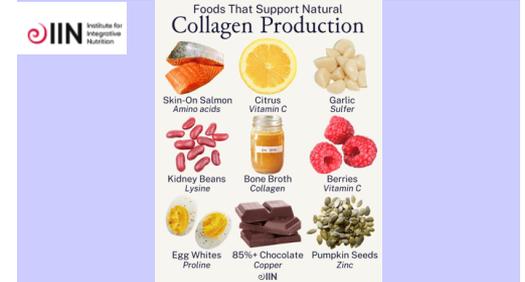
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### Final thoughts



Ashwagandha- good for sleep/anxiety/"wired and tired"

Andrographis- may reduce URI symptoms

Bacopa- may be good for "brain health"

Berberine- AMPK activator/gut influence

Collagen- types and use/may be effective



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