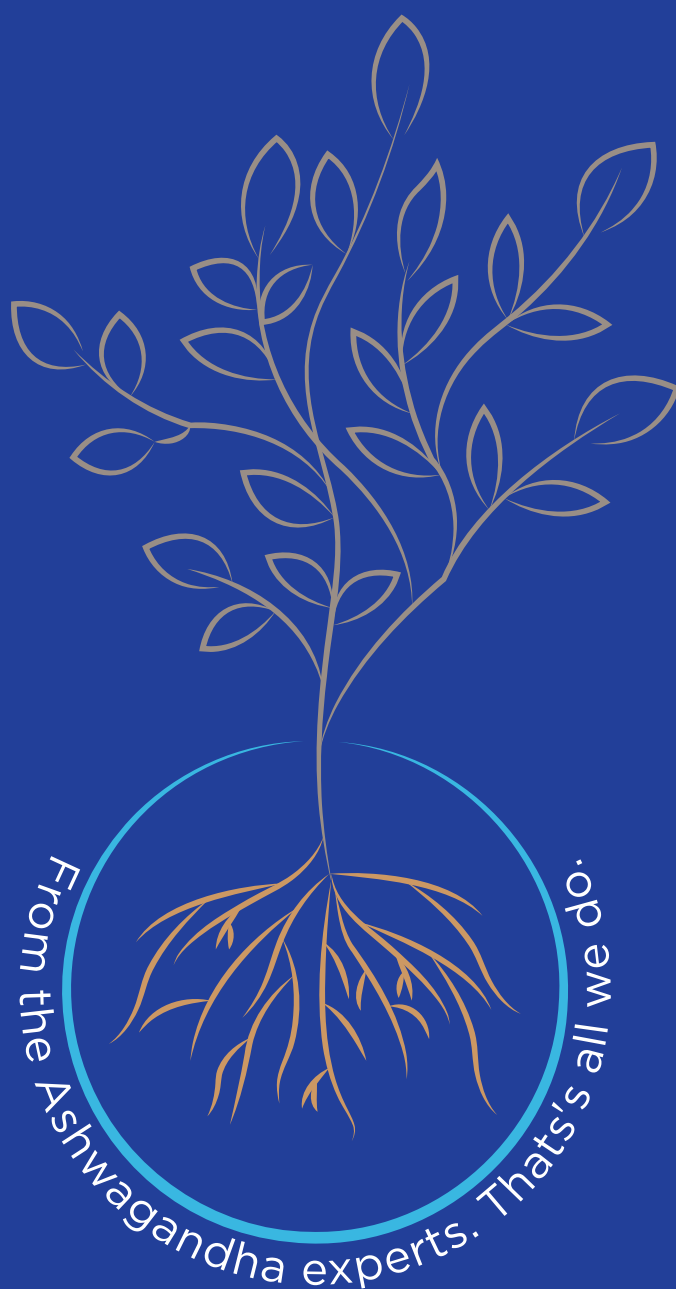




WORLD'S BEST ASHWAGANDHA

FROM THE ASHWAGANDHA EXPERTS. THAT'S ALL WE DO.

Scientific Studies



THE MOST CLINICALLY STUDIED ASHWAGANDHA ROOT EXTRACT IN THE WORLD

- Industry leader in clinical trials and research investigating the effectiveness of Ashwagandha.
- Largest pool of research studies with 50 studies: 30 published studies, 6 additional studies completed and in peer review, and 14 ongoing studies.
- Following the gold standard: Double-blind, Placebo-controlled, Randomized studies.
- Our trials are on healthy populations to mirror our mainstream customer base.
- Our publications are of academia standard, all in PubMed-indexed medicine journals.
- The principal investigators are leading researchers with established publication records.

STRESS RELIEF AND WELLNESS

STRESS AND ANXIETY



300mg/
Twice daily

8
Weeks

64
Participants

- A 44% reduction in **Perceived Stress Scale** scores ($p < 0.001$).
- A 27.9% reduction in **Serum Cortisol** levels ($p < 0.05$).
- A 72.3% reduction in total **General Health Questionnaire - 28 scores** ($p < 0.001$). The GHQ-28 domain scores for Somatic, Anxiety and Insomnia, Social Dysfunction, and Severe Depression reduced significantly by 76.1%, 69.7%, 68.1%, and 79.3% respectively ($p < 0.001$).
- A 71.6% reduction in total **Depression Anxiety Stress Scale** score ($p < 0.001$). The DASS scores for Depression, Anxiety, and Stress domains reduced significantly by 77.0%, 75.6%, and 64.2% respectively ($p < 0.001$).

Chandrasekhar, K., Kapoor, J., & Anishetty, S. (2012) A prospective, randomized double-blind, placebo-controlled study of safety and efficacy of a high-concentration full-spectrum extract of ashwagandha root in reducing stress and anxiety in adults. *Indian journal of psychological medicine*, 34(3), 255–262.

STRESS AND STRESS-RELATED FOOD CRAVINGS



300mg/
Twice daily

8
Weeks

50
Participants

- A 32.7% reduction in **Perceived Stress Scale** scores ($p < 0.05$).
- **Food Cravings Questionnaire** scores for Planning, Positive and Negative Reinforcement, Lack of Control, Emotion, and Environment domains reduced significantly ($p < 0.05$).
- A 22.2% decrease was observed in **Serum Cortisol** levels ($p < 0.05$).
- A 3% and 2.9% reduction in **Body Weight and Body Mass Index** respectively ($p < 0.05$).
- A 19.2% increase in **Oxford Happiness Questionnaire** scores ($p < 0.05$).
- A 20.4% and 15.8% reduction in **Three Factor Eating Questionnaire** scores for “Uncontrolled” and “Emotional Eating Behavior” were observed ($p < 0.05$).

Choudhary, D., Bhattacharyya, S., & Joshi, K. (2017). Body Weight Management in Adults Under Chronic Stress Through Treatment with Ashwagandha Root Extract: A Double-Blind, Randomized, Placebo-Controlled Trial. *Journal of evidence-based complementary & alternative medicine*, 22(1), 96–106.

STRESS, SLEEP, AND ANXIETY



125/300mg
Twice daily

8
Weeks

58
Participants

- A 33.7% and 38.3% reduction in **Perceived Stress Scale** scores for 250mg/day and 600mg/day respectively ($p < 0.001$).
- A 16.4% and 32.6% reduction in **Serum Cortisol** levels for 250mg/day and 600mg/day respectively.
- A 13.0% and 16.3% decrease in **Hamilton Anxiety Scale** scores for 250mg/day and 600mg/day ($p < 0.05$) respectively.
- A 35.2% and 46.0% decrease in **Sleep Quality** scores for 250mg/day and 600mg/day respectively, resulting in greater quality of sleep.

Salve, J., Pate, S., Debnath, K., & Langade, D. (2019). Adaptogenic and Anxiolytic Effects of Ashwagandha Root Extract in Healthy Adults: A Double-blind, Randomized, Placebo-controlled Clinical Study. *Cureus*, 11(12), e6466.

SLEEP

SLEEP AND ANXIETY



300mg/
Twice daily

10
Weeks

60
Participants

- **Sleep Actigraphy Parameters:**
 - A 30.3% decrease in **Sleep Onset Latency** ($p < 0.002$).
 - A 22.5% decrease in **Wake After Sleep Onset**.
 - A 19.0% increase in **Total Sleep Time**.
 - A 10.3% increase in **Sleep Efficiency** ($p < 0.001$).
 - A 7.9% increase in **Total Time in Bed**.
- A 30.0% decrease in the **Pittsburgh Sleep Quality Index**, indicating better sleep ($p < 0.0001$).
- A 21.6% decrease in the **Hamilton Anxiety Scale** scores.
- A significant increase in **Mental Alertness on Rising** scores from 10.3% at baseline to 69.2% at the end of the study.
- A significant increase in **Sleep Quality** ($p < 0.002$).

Langade, D., Kanchi, S., Salve, J., Debnath, K., & Ambegaokar, D. (2019). Efficacy and Safety of Ashwagandha (*Withania somnifera*) Root Extract in Insomnia and Anxiety: A Double-blind, Randomized, Placebo-controlled Study. *Cureus*, 11(9), e5797.

SLEEP AND ANXIETY



300mg/
Twice daily

8
Weeks

80
Participants

- **Sleep Actigraphy Parameters:**
 - A 15.5% and 33.5% decrease in **Sleep Onset Latency** in healthy and insomnia subjects respectively ($p < 0.0001$).
 - A 29.3% and 22.7% decrease in **Wake After Sleep Onset** in healthy and insomnia subjects respectively ($p < 0.0001$).
 - A 3.2% and 11.3% increase in **Sleep Efficiency** in healthy and insomnia subjects respectively ($p < 0.0001$).
- A 22.2% and 26.2% decrease in the **Pittsburgh Sleep Quality Index** scores in both healthy and insomnia subjects respectively ($p < 0.0001$), indicating better sleep.
- A 29.2% decrease in the **Hamilton Anxiety Scale** scores for Insomnia subjects ($p < 0.0001$).
- A 17.9% and 36.0% decrease in **Mental Alertness on Rising** scores for healthy and insomnia subjects respectively ($p < 0.0001$).
- A 31.6% and 45.3% increase in **Sleep Quality** in both healthy and insomnia subjects respectively.

Langade, D., Thakare, V., Kanchi, S., & Kelgane, S. (2020). Clinical evaluation of the pharmacological impact of ashwagandha root extract on sleep in healthy volunteers and insomnia patients: A double-blind, randomized, parallel-group, placebo-controlled study. *Journal of Ethnopharmacology*: 264:113276.

ELDERLY HEALTH

SLEEP AND GENERAL WELL-BEING IN ELDERLY



300mg/
Twice daily

12
Weeks

50
Participants

- A 24.2%, 22.4%, 18.9%, 5.6%, and 9.8% increase in **WHO-QOL** scores for the Global, Physical, Psychological, Social Relationship, and Environmental domains respectively ($p < 0.0001$).
- A 53.1% reduction in **Mental Alertness on Rising** scores indicates increased alertness ($p < 0.05$).
- A 57.1% reduction in **Sleep Quality** scores indicating an increase in the quality of sleep ($p < 0.0001$).
- A 33.5% reduction in the **Sleepiness Scale** scores, indicates improved and better quality of sleep.

Kelgane, S. B., Salve, J., Sampara, P., & Debnath, K. (2020). Efficacy and Tolerability of Ashwagandha Root Extract in the Elderly for Improvement of General Well-being and Sleep: A Prospective, Randomized, Double-blind, Placebo-controlled Study. *Cureus*, 12(2), e7083.

FRAILITY IN OLDER ADULTS



300mg/
Twice daily

8
Weeks

50
Participants

- A 12.6% reduction in **Frailty Assessment and Screening Tool** scores indicates increased alertness ($p < 0.05$).
- A 19.3% improvement in the **6 Minute Walking Test** scores.
- A 40.15 % reduction in the **Pittsburgh Sleep Quality Index** scores, indicates better sleep ($p < 0.001$).
- A 17.98% improvement in **Mini-Mental State Exam** scores ($p < 0.001$).
- A 8.06% increase in quality of life assessed by **Short Form-12 Questionnaire** ($p < 0.001$) scores.

A Double-Blind, Randomized, Parallel, Single-Center, Two-arm, Placebo Controlled Clinical Study to Assess the Efficacy and Safety of KSM-66 Ashwagandha® Capsule (300 mg) in Management of Frailty in Older Adults.

CARDIORESPIRATORY ENDURANCE

300mg/
Twice daily12
Weeks49
Participants

- A 11.3% and 13.6% increase at the end of 8 and 12 weeks in **Maximal Oxygen Consumption (VO₂ max)** respectively (p<0.001).
- A 14.8%, 19.7%, 21.6%, and 9.7% increase in **WHO-QOL** scores for the Physical Health, Psychological, Social Relationship, and Environmental domains respectively (p<0.05).

Choudhary, B., Shetty, A., & Langade, D. G. (2015). Efficacy of Ashwagandha (*Withania somnifera* [L.] Dunal) in improving cardiorespiratory endurance in healthy athletic adults. *Ayu*, 36(1), 63–68.

CARDIORESPIRATORY ENDURANCE AND RECOVERY

300mg/
Twice daily8
Weeks50
Participants

- A 16.4% increase in **Maximal Oxygen Consumption, VO₂ max** (p=0.0074).
- A 37.36%, 60.71%, and 59.27% increases in the **Recovery-Stress Questionnaire** scores for the General Stress, Fatigue, and General Well-being domains respectively (p<0.0001).
- A 6.67% increase in **Total Quality Recovery** scores (p<0.0001).
- A 45.2% decrease in **Daily Analysis of Life Demands for Athletes** scores (p<0.0001).
- A 10.59% increase in the **Antioxidant** levels.

Tiwari, S., Gupta, S. K., & Pathak, A. K. (2021). A double-blind, randomized, placebo-controlled trial on the effect of Ashwagandha (*Withania somnifera* Dunal.) root extract in improving cardiorespiratory endurance and recovery in healthy athletic adults. *Journal of Ethnopharmacology*, 113929.

MUSCLE STRENGTH, RECOVERY AND TESTOSTERONE

300mg/
Twice daily8
Weeks50
Participants

- A 15.3% increase in **Serum Testosterone** levels (p<0.05).
- A 138.7% and 52% increases in **Muscle Strength** for Bench Press and Leg Extension exercises respectively (p<0.05).
- A 8.1%, 17.1%, and 3.3% increases in **Muscle Size** for Thigh, Arm, and Chest respectively (p<0.05).
- A 3.5% reduction in **Average Body Fat** (p<0.05).
- A significant reduction in **Serum Creatine Kinase** levels indicates faster recovery.

Wankhede, S., Langade, D., Joshi, K., Sinha, S. R., & Bhattacharyya, S. (2015). Examining the effect of *Withania somnifera* supplementation on muscle strength and recovery: a randomized controlled trial. *Journal of the International Society of Sports Nutrition*, 12, 43.

MUSCLE STRENGTH AND ENDURANCE

300mg/
Twice daily8
Weeks80
Participants

- A 23.5% increase in **Muscle Strength** for bench press in males and a 22.8% increase in females, along with a 15% increase in leg extension exercises for males and a 9.9% increase for females.
- An overall 5.2%, 3.5%, and 4.1% increase in **Muscle Size** for Arm (p<0.0001), Thigh, and Chest respectively.
- An overall 1.7% reduction in **Average Body Fat**.
- A 9.51% and 7.15 % increase in **Maximal Oxygen Consumption (VO₂ max)** in both males and females respectively (p<0.0001).

Verma N et al (2023). Effects of Ashwagandha (*Withania somnifera*) standardized root extract on physical endurance and VO₂ max in healthy adults performing resistance training: An eight-week, prospective, randomized, double-blind, placebo-controlled study *FT000Research 2023*, 12:335.

MUSCLE RECOVERY AND TESTOSTERONE

300mg/
Twice daily8
Weeks80
Participants

- An 8.11% and 10.07% increase in **Free Testosterone** and **Total Testosterone** levels in males (p<0.001 and p<0.0001).
- An overall 7.19% reduction in the **Serum Creatinine Phosphokinase** levels indicates faster recovery (p<0.0001).
- No significant increase was found in **Testosterone** levels in women.

Verma N et al (2023). Effect of Ashwagandha Root Extract on Serum Testosterone and Muscle Recovery in Strength Training. *International Journal of Medical and Pharmaceutical Research*. Volume: 4 Issue:5; Page No: 371-381.

MALE FERTILITY AND TESTOSTERONE



225mg/
Thrice daily

12
Weeks

46
Participants

- A 167% increase in **Sperm Concentration** ($p < 0.001$).
- A 53% increase in **Semen Volume** ($p < 0.001$).
- A 57% increase in **Sperm Motility** ($p < 0.001$).
- A 17% increase in **Serum Testosterone** levels ($p < 0.001$).
- A 34% improvement in **Serum Luteinizing Hormone** ($p < 0.001$).

Ambiye, V. R., Langade, D., Dongre, S., Aptikar, P., Kulkarni, M., & Dongre, A. (2013). Clinical Evaluation of the Spermatogenic Activity of the Root Extract of Ashwagandha (*Withania somnifera*) in Oligospermic Males: A Pilot Study. *Evidence-based complementary and alternative medicine: eCAM*, 2013, 571420.

SEXUAL WELLNESS IN MEN



300mg/
Twice daily

8
Weeks

50
Participants

- The **Derogatis Interview for Sexual Functioning (DISF)** domain scores for Sexual Fantasy/Functions, Arousal, Orgasm, and Sexual Drive improved significantly by 3.64%, 14.3%, 6.12%, and 11.35% respectively ($p < 0.0001$).
- A 16.65% increase in **Serum Testosterone** levels ($p < 0.0001$).
- A 3.94% decrease in **Serum Prolactin** levels.
- The **Short Form-36 Quality of Life Questionnaire** domain scores for Physical Functioning, Energy/Fatigue, Emotional Well-being, Social Functioning, Pain, and General Health, improved significantly by 31.2%, 18.37%, 26.18%, 14.7%, 35.25%, and 11.07% respectively.

Chauhan, S., Srivastava, M. K., & Pathak, A. K. (2022). Effect of standardized root extract of ashwagandha (*Withania somnifera*) on well-being and sexual performance in adult males: A randomized controlled trial. *Health science reports*, 5(4), e741.

MALE FERTILITY, SEXUAL WELLNESS AND TESTOSTERONE IN MEN



300mg/
Twice daily

8
Weeks

93
Participants

- A 14.3% increase in **Serum Testosterone** levels ($p < 0.05$).
- A 10.43% increase in **Dihydrotestosterone** levels.
- A 26.4%, 32.14%, and 19.76% increase in **Semen Volume**, **Sperm Count**, and **Sperm Vitality** parameters respectively ($p < 0.05$).
- A 112.84% and 108.12% increase in the **Level of Sexual Desire** scores and **Number of Satisfying Sexual Encounters** respectively.
- The **International Index of Erectile Function** domain scores for Erectile Function, Orgasmic Function, Sexual Desire, and Intercourse Satisfaction improved significantly by 12.11%, 19.03%, 31.53%, and 29% respectively. The total **IIEF** score improved by 18.23%.
- A 15.52% increase in **Short Form-12 Questionnaire** scores for quality of life ($p < 0.0001$).

Role of Eight-Week Therapy with Ashwagandha Root Extract in Improving Sexual Health in Healthy Men: Findings of a Prospective, Randomized, Double-Blind, Placebo-Controlled Study.

SEXUAL WELLNESS AND TESTOSTERONE IN MEN



300mg/
Twice daily

8
Weeks

76
Participants

- A 12.17% and 10.23% increase in **Total Testosterone** ($p < 0.001$) and **Free Testosterone** levels respectively.
- A 38.68%, 32.88%, and 38.06% increase in **Semen Volume**, **Sperm Concentration**, and **Sperm Volume** parameters respectively ($p < 0.001$).
- A 160.6% increase in the Level of **Sexual Desire** scores ($p < 0.0001$).
- The total **International Index of Erectile Function** domain scores improved significantly ($p < 0.0001$).
- A 44.26% increase in total **Short Form-12 Questionnaire** scores for quality of life ($p < 0.0001$).

A Prospective, Randomized, Double-Blind, Placebo-Controlled, Clinical Study to Evaluate the Efficacy of KSM-66 Ashwagandha® capsule (300 mg) for Improving Sexual Health in Healthy Men (Under Peer Review).

SEXUAL HEALTH IN WOMEN



300mg/
Twice daily

8
Weeks

50
Participants

- A 60.9% reduction in **Female Sexual Distress Scale** scores ($p < 0.001$).
- A 62.4%, 59.4%, 82.4%, and 62.4% improvement in Arousal, Lubrication, Orgasm, and Satisfaction domains respectively ($p < 0.001$), and a 75.8% increase in total **Female Sexual Function Index** scores ($p < 0.001$).
- A 14.3% and 126.1% increase in the **Number of Total Sexual Encounters** and **Successful Sexual Encounters** respectively ($p < 0.001$).

Dongre, S., Langade, D., & Bhattacharyya, S. (2015). Efficacy and Safety of Ashwagandha (*Withania somnifera*) Root Extract in Improving Sexual Function in Women: A Pilot Study. *BioMed research international*, 2015, 284154.

SEXUAL WELLNESS AND GENERAL WELL-BEING IN WOMEN



300mg/
Twice daily

8
Weeks

80
Participants

- A 52.8% reduction in **Female Sexual Distress Scale** scores ($p < 0.0001$).
- A 40%, 48.7%, 75.7%, 71.6%, and 50.8% improvement in Arousal, Lubrication, Orgasm, Desire, and Satisfaction domains respectively, and a 59.2% increase in total **Female Sexual Function Index** scores ($p < 0.0001$).
- A 18.3% and 31.8% increase in the **Number of Total Sexual Encounters** and **Successful Sexual Encounters** respectively.
- A 71.03% reduction in total **General Health Questionnaire - 28** scores.

Ajgaonkar A, Jain M, Debnath K. (2022) Efficacy and Safety of Ashwagandha (*Withania somnifera*) Root Extract for Improvement of Sexual Health in Healthy Women: A Prospective, Randomized, Placebo-Controlled Study. *Cureus* doi:10.7759/Cureus.

SEXUAL WELL-BEING IN WOMEN



300mg/
Twice daily

8
Weeks

61
Participants

- A 59.24% reduction in **Female Sexual Distress Scale** scores ($p < 0.05$).
- A 40.23%, 23.65%, 47.21%, 46.78%, 31.45%, and 59% improvement in Arousal, Lubrication, Orgasm, Desire, Satisfaction, and Pain domains respectively, and a 39.28% increase in total **Female Sexual Function Index** scores ($p < 0.05$).
- A statistically significant increase in the **Number of Total Sexual Encounters** and **Successful Sexual Encounters** respectively.
- A 58.06% increase in the **Level of Sexual Desire** scores and a 37.90% reduction in **Perceived Stress Scale** scores ($p < 0.001$).
- A 2.17% increase in **Estrogen** levels and an 18.72% reduction in **Follicle Stimulating Hormone** levels.

Role of Eight-Week Therapy with Ashwagandha Root Extract in Improving Sexual Health in Healthy Women: Findings of a Prospective, Randomized, Double-Blind, Placebo-Controlled Study.

SEXUAL WELLNESS IN WOMEN



300mg/
Twice daily

8
Weeks

84
Participants

- A 53.67% reduction in **Female Sexual Distress Scale** scores ($p < 0.05$).
- 58.16%, 64.91%, 81.48%, 43.31%, 62.78%, and 40.31% improvement in Arousal, Lubrication, Orgasm, Desire, Satisfaction, and Pain domains respectively, and a 58.83% increase in total **Female Sexual Function Index** scores ($p < 0.05$).
- A statistically significant increase in the **Number of Intercourses, Orgasms**, and **Satisfying Sexual Activities** respectively.
- A 36.36% increase in the **Level of Sexual Desire** scores and a 58.02% reduction in **Perceived Stress Scale** scores.
- A 3.57% increase in **Estrogen** levels and an 8.16% reduction in **Progesterone** levels.

A Prospective, Randomized, Double-Blind, Placebo-Controlled Clinical Study to Evaluate the Effects of KSM-66 Ashwagandha® capsule (300 mg) on Sexual Health in Healthy Women. (Under Peer review).

MENOPAUSAL HEALTH

CLIMACTERIC SYMPTOMS IN PERIMENOPAUSAL WOMEN



300mg/
Twice daily

8
Weeks

100
Participants

- The **Menopause Rating Scale** scores for Psychological and Urogenital domains reduced significantly by 24.7% and 26.67% respectively. There was a 23.51% decrease in the total **MRS** score ($p < 0.0001$).
- The **Menopause Specific Quality of Life** scores for Vasomotor, Psychological, Physical, and Sexual domains reduced significantly by 2.4%, 5.09%, 5.05%, and 5.09%. There was a 4.02% decrease in the total **MEN-QOL** score ($p < 0.0001$) respectively.
- A 30.88% decrease in the **Hot Flash** score ($p < 0.0001$).
- A 35.43% increase in **Serum Estradiol** levels ($p < 0.05$).
- The levels of **Follicle Stimulating Hormone**, **Luteinizing Hormone**, and **Testosterone** were reduced by 36.60%, 17.27%, and 1.96% respectively.

Gopal, S., Ajgaonkar, A., Kanchi, P., Kaundinya, A., Thakare, V., Chauhan, S. and Langade, D. (2021) Effect of an ashwagandha (*Withania Somnifera*) root extract on climacteric symptoms in women during perimenopause: A randomized, double-blind, placebo-controlled study. *J. Obstet. Gynaecol. Research*, 47(12), 4414–4425.

MENOPAUSAL SYMPTOMS IN WOMEN



300mg/
Twice daily

8
Weeks

60
Participants

- The **Menopause Rating Scale** scores for Psychological, Somatic, and Urogenital domains reduced significantly by 44.6%, 42.06%, and 31.50% respectively. There was a 40.93% decrease in the total **MRS** score ($p < 0.0001$).
- A 26.89% decrease in the **Number of Hot Flashes** ($p < 0.05$).
- A 4.5% increase in **Serum Estradiol** levels.
- A 47.01% decrease in **Perceived Stress Scale** scores ($p < 0.0001$).
- A 90.07% increase in **Short Form-12 Questionnaire** scores, indicating improved quality of life ($p < 0.0001$).

A Prospective, Double-Blind, Randomized, Parallel, Single-Center, Two-Arm, Placebo-Controlled Clinical Study to Assess the Efficacy and Safety of KSM-66 Ashwagandha® capsule (300 mg) on Menopause Symptoms.

HORMONAL HEALTH

THYROID HEALTH



300mg/
Twice daily

8
Weeks

50
Participants

- A 8.59% reduction in serum **Serum Thyroid Stimulating Hormone** concentration ($p < 0.0001$).
- A 47.16% increase in **Serum-Free Triiodothyronine (T3)** level ($p < 0.0001$).
- A 23.19% increase in **Serum-Free Thyroxine (T4)** level ($p < 0.0001$).

Sharma, A. K., Basu, I., & Singh, S. (2018). Efficacy and Safety of Ashwagandha Root Extract in Subclinical Hypothyroid Patients: A Double-Blind, Randomized Placebo-Controlled Trial. *Journal of Alternative and Complementary Medicine (New York, N.Y.)*, 24(3), 243–248.

SUBCLINICAL HYPOTHYROIDISM



300mg/
Twice daily

12
Weeks

56
Participants

- A significant reduction in **Serum Thyroid Stimulating Hormone** concentration ($p < 0.0001$).
- An increase in **Free** and **Total Triiodothyronine (T3)** levels.
- A decrease in **Free** and **Total Thyroxine (T4)** levels.
- A significant decrease in **Thyroid Questionnaire Assessment** scores ($p < 0.001$).
- A significant improvement in **Mini-Mental State Exam** scores ($p < 0.001$).

Effects of Ashwagandha Root Extract on subclinical hypothyroidism: A Prospective, Randomized, Placebo-Controlled Study (Under Peer Review).

MEMORY AND COGNITION

300mg/
Twice daily8
Weeks51
Participants

- A significant improvement in **Working Memory Subtests** that relate to the ability to hold information for immediate sequential actions ($p < 0.05$).
- A significant improvement in **Executive Function** that facilitates coordination, selection, and execution of wilful action ($p < 0.05$).
- A significant improvement in **Attention and Processing Speed** ($p < 0.05$).
- A significant improvement in **General Memory Subtests** that relate to the ability to recall after a substantial passage of time, which is associated with learning and productivity ($p < 0.05$).
- A significant improvement in **Immediate Memory Subtests** that relate to the ability to recall within a few minutes of stimuli presentation and reflect learning ability ($p < 0.05$).

Choudhary, D., Bhattacharyya, S., & Bose, S. (2017). Efficacy and Safety of Ashwagandha (*Withania somnifera* (L.) Dunal) Root Extract in Improving Memory and Cognitive Functions. *Journal of dietary supplements*, 14(6), 599–612.

MEMORY, FOCUS, AND COGNITION IN ADULTS

300mg/
Twice daily8
Weeks114
Participants

- A significant improvement in **Episodic Memory Subtests** that relate to the ability to retain memories that can be consciously recorded.
- A significant improvement in **Working Memory Subtests** that relate to the ability to retain information while carrying out more complex cognitive tasks.
- A significant improvement in **Attention and Executive Function** ($p < 0.05$).
- A significant reduction of 12.89% in total mood disturbance score on the **Profile of Mood States** scale ($p < 0.001$).
- The **BRIEF-A Scale** for Behavior Regulation Index (BRI), and Metacognition Index reduced significantly by 22.34% and 17.03% respectively ($p < 0.001$).

Effects of KSM-66 on cognition, energy, and mood in adults with self-reported, cognitive and energy problems: a randomized, double-blind, placebo-controlled study (Under Peer Review).

MEMORY, FOCUS, AND COGNITION IN CHILDREN

150mg/
Twice daily8
Weeks85
Participants

- A significant improvement in **Episodic Memory Subtests** that relate to the ability to retain memories that can be consciously recorded.
- A significant improvement in **Working Memory Subtests** that relate to the ability to retain information while carrying out more complex cognitive tasks.
- A significant improvement in **Attention and Executive Function** ($p < 0.05$).
- An 18.06% reduction in the **Strength and Difficulties Questionnaire** scores ($p < 0.05$).
- A 14.52% reduction in **Sleep Disturbance Scale for Children**, indicating improved sleep without disturbance ($p = 0.04$).
- The **BRIEF-2 Scale** scores for the Behavior at Regulation Index (BRI), Emotional Regulation Index (ERI), and Cognitive Regulation Index (CRI) reduced significantly by 10.98%, 13.14% and 12.84% respectively ($p < 0.001$).

Effects of KSM-66® Ashwagandha on memory, attention, executive function, and sleep in children: a randomized, double-blind, placebo-controlled study (Under Peer Review).

ADHD IN CHILDREN

150mg/
Twice daily8
Weeks58
Participants

- The **ADHD Rating Scale-IV** scores for Inattention and Hyperactivity domains reduced significantly by 37.28% and 36.24% respectively. There was a 36.6% reduction in the total **ADHD Rating Scale** score ($p < 0.001$).
- The **Behavior Rating Inventory of Executive Function (BRIEF-2)** scores for the Behavioral Regulation Index (BRI), Emotional Regulation Index (ERI), and Cognitive Regulation Index (CRI), reduced significantly by 47.9%, 38.7%, and 45.7% respectively. There was a 44.2% decrease in the Global Executive Composite (GEC) score ($p < 0.0001$).
- The **Patient-Reported Outcomes Measurement Information System (PROMIS)** scores for Sleep Disturbance and Anxiety reduced by 39.5% and 40.9% respectively ($p < 0.001$). There was a 40.1% decrease in the total **PROMIS** score ($p < 0.001$).

Efficacy of Ashwagandha Root Extract in Treatment of Mild Attention Deficit Hyperactivity Disorder (ADHD) in Children: A randomized, double-blind, placebo-controlled clinical study.

PERSONAL CARE

SKIN HEALTH



1ml of skin
lotion

60
Days

53
Participants

- A 55.9%, 66.5%, 86.5%, and 80.5% improvement in Wrinkles, Pores, Hydration, and Pigmentation respectively measured using the **Physician Global Assessment** scores.
- A 2.82% decrease in the **Melanin Index**.
- A 15.12% decrease in the **Transepidermal Water Loss (TEWL)**.
- A 20.6% increase in **Skin Hydration**.
- A 16.4% increase in **Skin Elasticity**.

Narra K, Naik S K, Ghatge A S (March 15, 2023) A Study of Efficacy and Safety of Ashwagandha (*Withania somnifera*) Lotion on Facial Skin in Photoaged Healthy Adults. *Cureus* 15(3): e36168. doi:10.7759/cureus.36168.

HAIR HEALTH



2ml of hair
serum

75
Days

60
Participants

- A 45.08% and 68.87% reduction in hair loss was seen in both **Hair with Bulb Count** and **Hair without Bulb Count** respectively.
- A 4.64%, 7.28%, 3.55%, and 4.83% improvement in **Hair Density**, **Hair Growth**, **Hair Thickness**, and **Anagen Percentage**. Also, there was an 8.33% reduction in the **Telogen Percentage** and an overall reduction of 51.75% in the **Anagen and Telogen Ratio (A:T ratio)**.
- A 68.88% decrease in the **Percentage of Hair Pulled**.
- The **Hair Specific Skindex-29** scores for Symptom scores, Function scores, Emotional scores, and Total scores were reduced significantly by 16.81%, 21.14%, 12.49%, and 17.82% respectively.

Yerram, C., Jillella, A., & Reddy, V. (2023). Effects of *Withania somnifera* root extract serum application on hair health in healthy adults: A prospective, double-blind, randomized, parallel, placebo-controlled study. *Journal of Ayurveda and Integrative Medicine*, 14(6), 100817. <https://doi.org/10.1016/j.jaim.2023.100817>.

HAIR AND SKIN HEALTH (ORAL ADMINISTRATION)



300mg/
Twice daily

75
Days

100
Participants

- A 11.80% decrease in **Transepidermal Water Loss (TEWL)**.
- A 11.73% decrease in **Dermatology Quality of Life Index (DLQI)** scores.
- A 3.47%, 4.62%, and 3.86% improvement in **Hair Density**, **Hair Growth**, and **Anagen Percentage** respectively. Also, there was a 15.63% reduction in the **Telogen Percentage**.
- The **Hair Specific Skindex-29** scores for Symptom scores, Function scores, Emotional scores, and Total scores were reduced significantly by 18.98%, 23.40%, 17.70%, and 20.31% respectively.

A Prospective, Randomized, Double-Blind, Placebo-Controlled Clinical Study of Efficacy and Safety of Ashwagandha Root Extract Capsule on Skin and Hair Health in Healthy Adults (Under Peer Review).

SAFETY

SAFETY OF KSM-66 ASHWAGANDHA



300mg/
Twice daily

8
Weeks

80
Participants

- No statistically significant change or abnormality in the **Thyroid Hormonal Profile**.
- No significant change in **Alanine Transaminase (ALT/SGPT)**, **Aspartate Transaminase (AST/SGOT)**, and **Alkaline Phosphatase**.
- No statistically significant change in the respective mean values of **Hematological Parameters** and **Vital Parameters**.

Verma, N., Gupta, S. K., Tiwari, S., & Mishra, A. K. (2020). Safety of Ashwagandha Root Extract: A Randomized, Placebo-Controlled, Study in Healthy Volunteers. *Complementary therapies in medicine*, 57, 102642.

ANTI-AGING

LIFESPAN EXTENSION OF CAENORHABDITIS ELEGANS



- **Purpose:** To evaluate the effect of KSM-66 Ashwagandha in enhancing the lifespan of *Caenorhabditis elegans*.
- **Results:** Wild-type worms showed around 20% **Lifespan Extension** when treated with KSM-66 Ashwagandha. The authors concluded that KSM-66 Ashwagandha successfully enhanced the lifespan of *C. elegans*.

Kumar, R., Gupta, K., Saharia, K., Pradhan, D., & Subramaniam, J. R. (2013). *Withania somnifera* root extract extends lifespan of *Caenorhabditis elegans*. *Annals of neurosciences*, 20(1), 13-16.

TELOMERASE ACTIVITY IN HELA CELLS



- **Purpose:** To evaluate the effect of KSM-66 Ashwagandha to increase telomerase activity in HeLa cells, an in-vitro human cell-culture model.
- **Results:** KSM-66 Ashwagandha increased **Telomerase Activity**. Thus, ashwagandha root extract has anti-aging potential.

Raguraman, V. and Subramaniam, J. (2016) *Withania somnifera* Root Extract Enhances Telomerase Activity in the Human HeLa Cell Line. *Advances in Bioscience and Biotechnology*, 7, 199-204.

TOXICITY STUDIES ON KSM-66 ASHWAGANDHA



- Acute Oral Toxicity of KSM-66 Ashwagandha in Rats.
- 28-day Repeated Oral Dose Study of KSM-66 Ashwagandha in Rats.
- Acute and 28 Days Repeated Dose Genotoxicity Study of Ashwagandha in Albino Rats.
- Acute Oral Toxicity Study of KSM-66 Ashwagandha Root Extract in Wistar Rats.
- Two weeks Dose Range Finding Study of KSM-66 Ashwagandha Root Extract by Oral Route in Wistar Rats.
- 90-Day Repeated Dose Oral Toxicity Study Of KSM-66 Ashwagandha Root Extract in Wistar Rats.
- In vivo Mammalian Erythrocyte Micronucleus Test with KSM-66 Ashwagandha Root Extract in Swiss Albino Mice.
- Bacterial Reverse Mutation Test with KSM-66 Ashwagandha Root Extract in Salmonella Typhimurium Strains.
- In vitro Chromosomal Aberration Test with KSM-66 Ashwagandha Root Extract in Cultured Human Lymphocytes.
- Thyroid Toxicity Evaluation in Zebrafish Embryos.
- Subacute Toxicity of KSM-66 Ashwagandha in Rats.
- Reproductive and Developmental Toxicity of KSM-66 Ashwagandha in Rats.

STRESS AND IMMUNITY IN HORSES



2.5g, 5g, or
10g/animal

21
Days

24
Animals

- A statistically significant reduction ($p < 0.05$) in the **Cortisol and Epinephrine** levels.
- A statistically significant increase in **Super Oxide Dismutase** concentration ($p < 0.05$).
- A non-significant increase in **Total Erythrocyte Count, Total Leucocyte Count, Hemoglobin, and Lymphocyte Percentage**.
- A statistically significant decrease in **Glucose, Triglycerides, Creatinine, Alanine Aminotransferase, Aspartate Aminotransferase, and Interleukin-6** concentrations ($p < 0.05$).

Priyanka G, et al B (2020). Adaptogenic and Immunomodulatory Activity of Ashwagandha Root Extract: An Experimental Study in an Equine Model. *Frontiers in Veterinary Sciences* 7:541112.

STRESS AND ANXIETY IN DOGS



15mg/kg
body weight

4
Weeks

24
Animals

- A 26.9% reduction in **Urine Cortisol Creatinine** ratio ($p < 0.001$).
- A 44.4% and 42.2% reduction in **Canine Brief Pain Inventory** scores for Pain Severity and Pain Interference respectively.
- A 19.5%, 36.0%, and 20.5% reduction in the Fear and Anxiety, Excitability, and Aggression domains of the **Canine Behavioral Assessment & Research Questionnaire** scores.

Kaur J, Seshadri, S, Golla, K & Sampara, P (2022) Efficacy and safety of standardized Ashwagandha (*Withania somnifera*) root extract on reducing stress and anxiety in domestic dogs: A randomized controlled trial. *Journal of Veterinary Behavior*, 51, 8-15.

STRESS AND ANXIETY IN CATS



15mg/kg
body weight

4
Weeks

16
Animals

- A statistically significant increase in **Erythrocyte Count, Leucocyte Count, and Hemoglobin** ($p < 0.05$).
- A statistically significant increase in **Catalase**, and **GSH** concentrations ($p < 0.001$).
- A significant reduction in **Cortisol** levels ($p < 0.05$).
- A significant decrease in the **Tumour Necrosis Factor- α** , **Interferon- γ** and **Interleukin-10** concentrations.

Efficacy and safety of KSM-66 Ashwagandha in reducing stress and anxiety and in improving the general well-being in cats (Under Peer review).

AGING-RELATED CHANGES IN HEALTHY GERIATRIC DOGS



15mg/kg
body weight

60
Days

20
Animals

- A statistically significant increase in **Erythrocyte Count, Leucocyte Count, and Hemoglobin** ($p < 0.05$).
- A statistically significant increase in **Super Oxide Dismutase, Catalase, and GSH** concentrations ($p < 0.001$).
- A 21.6% reduction in **Cortisol** levels.
- A statistically significant reduction in **Interferon- γ** and **Interleukin-10** concentrations ($p < 0.001$).

Effects of Ashwagandha Root Extract on Aging-Related Changes in Healthy Geriatric Dogs: A Randomized, Double-Blinded Placebo-Controlled Study (Under Peer review).

Health Canada has granted approval to KSM-66 for a broad range of compelling functional claims based on KSM-66's impressive set of clinical studies, which have been published in respected peer-reviewed journals indexed in the PubMed database of the U.S. Government's NIH. Under Health Canada NPN (Natural Product Number) 80047973, a few of the end-product claims that formulators can make using KSM-66 at the clinically relevant dosage are:

- | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> 1. Helps increase resistance to stress/anxiety in individuals with a history of chronic stress, thereby improving their overall quality of life. 2. Athletic support or Workout/ Exercise supplement. 3. Helps promote healthy testosterone production in males. 4. Helps support physical aspects of sexual health in women. 5. Used in herbal medicine for memory enhancement. 6. Used in herbal medicine as Rasayana (rejuvenating tonic); 7. Used in herbal medicine to relieve general debility, especially during convalescence and old age. | <ol style="list-style-type: none"> 8. Used in herbal medicine as a sleep aid. 9. Used in herbal medicine as an adaptogen to help increase energy and resistance to stress. 10. Helps support libido. 11. Helps support emotional aspects of sexual health. 12. Helps support thyroid function in people with hypothyroidism. 13. Helps in the function of the thyroid gland in people with hypothyroidism; and 14. Helps promote physical performance in previously untrained individuals when combined with regular resistance training. |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

STUDIES UNDER PEER REVIEW

1. Efficacy and safety of KSM-66 Ashwagandha root extract on Stress and Stress-related food cravings.
2. Efficacy and Safety of KSM-66 Ashwagandha for Menopausal symptoms in women.
3. Efficacy and Safety of KSM-66 Ashwagandha root extract in the management of Frailty in Older Adults.
4. Efficacy and Safety of KSM-66 Ashwagandha root extract on Immune Function Enhancement and Quality of Life in Healthy adults.
5. Efficacy and Safety of KSM-66 Ashwagandha root extract administration on the improvement of Skin and Hair Health parameters in Healthy adults.
6. Efficacy and Safety of the Topical Application of Serum containing KSM-66 Ashwagandha root extract on Hair Health parameters in Healthy adults.
7. Efficacy and Safety of the Topical Application of Lotion containing KSM-66 Ashwagandha root extract on Skin Health parameters in Healthy Adults.
8. Efficacy and safety of KSM-66 Ashwagandha root extract in improving Cognition in Dogs: A Randomized, Placebo-controlled, Multicentric study.
9. Efficacy and safety of KSM-66 Ashwagandha root extract in improving Endurance in Horses: A Randomized, Placebo-controlled, Multicentric study.

ONGOING STUDIES

- Stress and Anxiety (Multicentric, 1200 participants across 7 countries) - 1
- Men's Health - 1
- Women's Health - 1
- High Dose Safety - 1
- Sleep - 1
- Personal Care (Hair, Skin, Beauty from outside, Beauty from within) - 3
- Long-term Safety - 1
- Children - 1
- Pet Health - 2
- Stress and Anxiety - 2

SUBSTANTIATED STRUCTURE/FUNCTION CLAIMS

KSM-66 Ashwagandha's substantiated structure/ function claims are in accordance with the requirements of the Dietary Supplement Health and Education Act of 1994. Backed by peer-reviewed studies, numerous claims have been deemed acceptable for KSM-66. Some examples include:

<p>Stress and Anxiety</p> <ul style="list-style-type: none"> • Helps to reduce stress and anxiety. • Helps to promote calming and relaxation. • Helps to reduce and maintain normal cortisol levels. • Helps to reduce mood disturbances and elevate your mood. • Helps to promote happiness. 	<p>Sleep</p> <ul style="list-style-type: none"> • Helps to improve the quality of sleep. • Helps to reduce sleep onset latency. • Helps to boost sleep efficiency. • Helps to enhance mental alertness on rising. • Helps to wake up fresh.
<p>Sports Function</p> <ul style="list-style-type: none"> • Helps to boost stamina and endurance. • Helps to increase muscle size. • Helps to increase muscle strength. • Helps to reduce body fat percentage. • Helps to reduce fatigue and enhance sports performance. • Helps to increase the speed of muscle recovery. 	<p>Memory and Cognition:</p> <ul style="list-style-type: none"> • Helps to improve memory and cognition. • Helps to boost executive function and attention. • Helps to enhance mental focus and mental clarity. • Helps to retain information and memories. • Helps to improve speed and accuracy of mental performance.
<p>Men's Health:</p> <ul style="list-style-type: none"> • Helps to increase and maintain healthy levels of natural testosterone. • Helps to increase sexual desire, drive, arousal, and satisfaction. • Helps to improve sexual performance and overall sexual health. • Helps to increase sperm count, sperm concentration, and semen volume. 	<p>Women's Health:</p> <ul style="list-style-type: none"> • Helps to reduce sexual distress. • Helps to increase sexual arousal, lubrication, orgasm and satisfaction. • Helps to enhance sexual desire and overall sexual function. • Helps to alleviate menopausal symptoms. • Helps to reduce hot flashes and night sweats. • Helps to support a healthy response to common symptoms associated with menopause.
<p>Weight Management:</p> <ul style="list-style-type: none"> • Helps to curb stress-related eating habits. • Helps to reduce food cravings. • Helps to improve overall body composition when used as a part of a healthy diet and exercise program. 	<p>Thyroid Function Support</p> <ul style="list-style-type: none"> • Helps to normalize thyroid hormone levels. • Helps to maintain normal thyroid health.
<p>Children:</p> <ul style="list-style-type: none"> • Helps to improve sleep. • Helps to reduce inattention and hyperactivity in children. • Helps to improve behavior and emotional regulation. • Helps to improve memory, learning, concentration, and focus. 	<p>Personal care:</p> <ul style="list-style-type: none"> • Helps to improve skin hydration and skin texture. • Helps to reduce hyperpigmentation and boost collagen production. • Helps to improve hair density and reduce hair fall. • Helps to nourish the scalp and reduce scalp irritation.

The above statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease. These claims are based upon clinical studies. It is the responsibility of the manufacturer (licensee) to notify the FDA within 30 days, after first marketing a product with a structure/function claim that the statement(s) are being made, as required under section 403(r)(6) of the FD&C Act.



WORLD'S BEST ASHWAGANDHA
FROM THE ASHWAGANDHA EXPERTS. THAT'S ALL WE DO.

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