

“Botanical Nutrition: The Roles of Ginseng and Turmeric in Sports Performance and Recovery”

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INTRODUCTION

- Ginseng (*Panax ginseng*) contains ginsenosides supporting endurance and reducing fatigue.
- Turmeric/Curcumin reduces inflammation, oxidative stress, DOMS, and muscle damage.

Ginseng

- Several reviews and clinical trials report reduced subjective fatigue and some improvements in endurance-related outcomes; effects vary by species (*Panax ginseng* vs. red ginseng), extract standardization, dose and study population.
- Evidence for consistent ergogenic effects (e.g., sprint/power) is limited; most positive findings relate to fatigue reduction and endurance capacity in specific protocols.

Turmeric / Curcumin

- Meta-analyses and trials show curcumin can reduce markers of muscle damage (creatine kinase), reduce inflammatory markers (e.g., CRP, IL-6) and attenuate DOMS after eccentric exercise.
- Benefits appear stronger when bioavailable formulations (e.g., nanoparticle, phytosomal, or hydrolyzed preparations) and adequate dosing are used.

MECHANISM OF ACTION

- **Anti-inflammatory action:** Curcumin inhibits NF-κB and downstream cytokines (IL-6, TNF-α), reducing inflammation after intense exercise.
- **Antioxidant activity:** Both ginsenosides and curcumin reduce oxidative stress in skeletal muscle, protecting cellular structures and mitochondria.
- **Energy metabolism & fatigue:** Ginseng may modulate SIRT1 and mitochondrial function, improving energy utilization and perceived exertion.
- **Muscle regeneration:** Some evidence suggests ginseng can attenuate muscle damage markers and accelerate recovery processes.
- Curcumin enhances mitochondrial biogenesis via PGC-1α activation.
- Ginseng regulates cortisol response and supports adrenal balance.
- Both may improve endothelial function, aiding blood flow during exercise

DOSAGE SUMMARY TABLE

Botanical	Typical Dose	Form	Notes
Ginseng (<i>Panax ginseng</i>)	200–400 mg/day	Standardized ginsenoside extract	Best effects seen after 2–8 weeks of continuous use.
American Ginseng (<i>Panax quinquefolius</i>)	100–300 mg/day	Standardized extract	More calming; beneficial for recovery and immune support.
Turmeric / Curcumin	500–1500 mg/day	Enhanced bioavailability forms (phytosome, liposomal, nanoparticle)	Stronger effects with enhanced formulations. Helps reduce inflammation and DOMS.
Curcumin + Piperine	500 mg curcumin + 5–20 mg piperine	Capsule	Piperine boosts absorption 20× but may cause mild GI discomfort in some users.

Ginseng

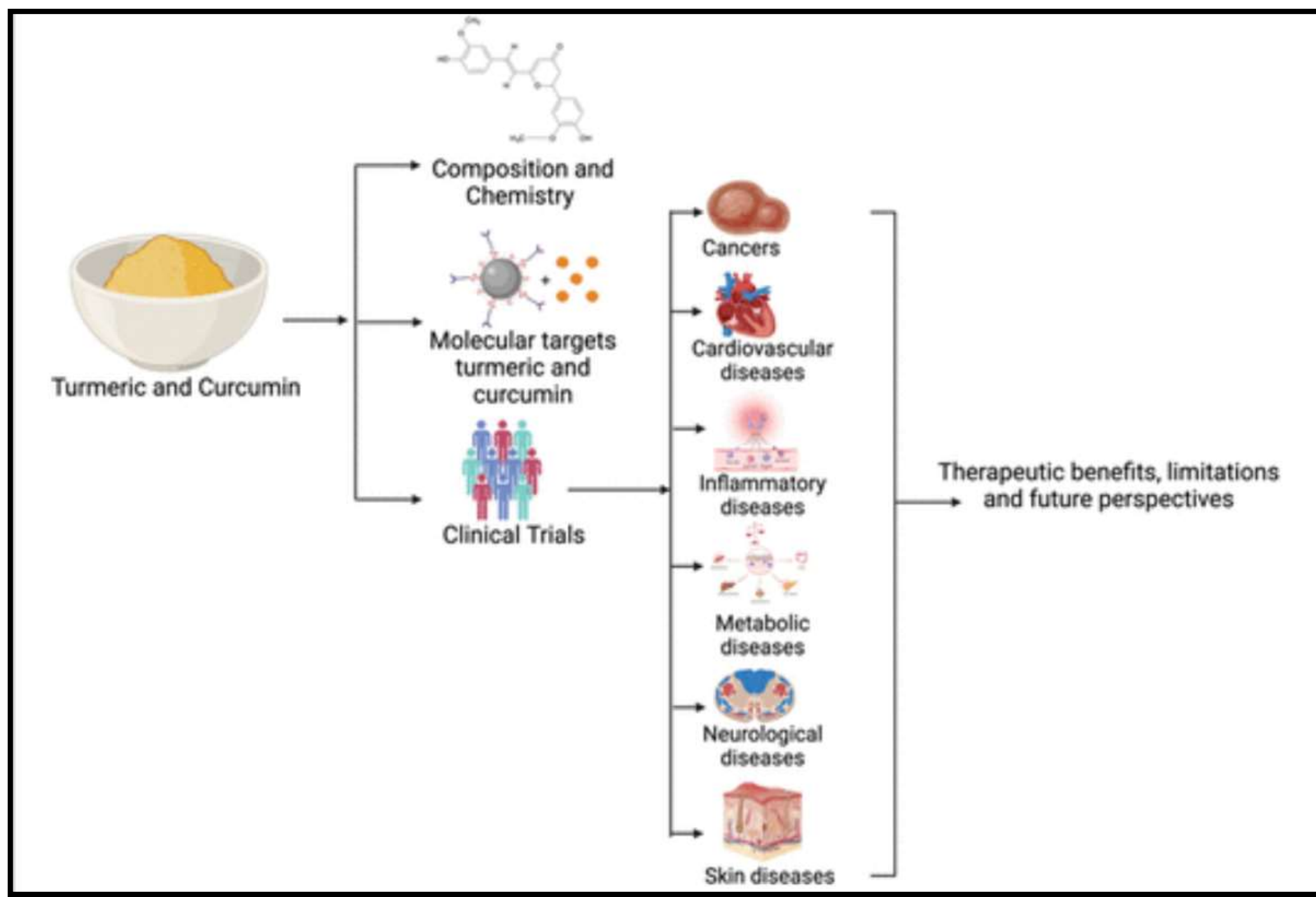
- Typical studied doses: 200–400 mg/day of standardized *Panax ginseng* extract (varies by product and ginsenoside content). Some trials use higher doses—follow product labeling and consult a sports dietitian.
- Timing: daily use for several weeks (often 2–8 weeks) before testing or competition to assess benefits.
- Safety: usually well tolerated; watch for insomnia, gastrointestinal upset, possible interaction with warfarin and stimulants.

Turmeric / Curcumin

- Typical studied doses: 500–1500 mg/day of curcumin (often as enhanced-bioavailability formulations). Acute dosing around intense events or regular daily dosing have both been studied.
- Timing: many studies use dosing starting before and continuing for 24–72 hours after damaging exercise; chronic use also explored for ongoing recovery.
- Safety: generally safe; high doses may cause gastrointestinal discomfort. Curcumin can interact with anticoagulants and some medications—check with medical staff.
- Training-synergy: Both botanicals show greater effectiveness when paired with structured endurance or resistance programs.
- Hydration and diet strongly influence responsiveness.
- Consider personalized dosing based on training intensity, athlete weight, and recovery needs.

ADDITIONAL KEY TAKEAWAYS

- Curcumin may promote mitochondrial biogenesis via PGC-1α activation.
- Ginseng can help regulate cortisol and reduce stress-induced training fatigue.
- Endothelial function improvement supports better blood flow during training and recovery.
- Turmeric/curcumin has consistent evidence for reducing markers of EIMD and DOMS, especially when bioavailable formulations are used.
- Ginseng shows promise for reducing fatigue and improving some endurance outcomes, but results are mixed and product-dependent.
- Both botanicals are generally safe when used appropriately, but practitioners should consider interactions, standardization, and athlete-specific needs.



CONCLUSION

- Both are safe with mindful dosing and consideration of interactions. Curcumin consistently reduces inflammatory markers (CRP, IL-6), CK levels, and DOMS.
- Ginseng improves fatigue resistance, supports oxygen uptake efficiency, and may enhance glycogen storage.
- Enhanced-bioavailability curcumin forms significantly outperform standard powders.
- Using these botanicals alongside structured exercise programs yields stronger benefits.

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