



Herbal bioenhancers: A Vehicle of Hope

Sheikh Uzma Farooq¹, Aditya Sharma^{2*} and Durgesh Kumar Mishra¹

¹Department of Veterinary Pharmacology and Toxicology, Khalsa College of Veterinary and Animal Sciences, Amritsar

²Department of Veterinary Pathology, Khalsa College of Veterinary and Animal Sciences, Amritsar

*Corresponding author: aditya555sharma@gmail.com

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Abstract

Herbal bioenhancers are natural substances that enhance the biological activities of other substances present in the body. They are derived from plants and can be used in the form of supplements, extracts, and powders. These herbal bioenhancers are becoming increasingly popular in the world of health and wellness, as more people look for natural ways to enhance their overall health. Various herbal bioenhancers such as piperine, curcumin, ginger, ginseng, garlic, guggul, grapefruit, licorice, turmeric, milk thistle, black cohosh, green tea, cat's claw, saw palmetto, and astragalus are being used. Owing to the no or mere side effects and ability to work in synergy with the drugs have brought them in limelight.

Keywords: Herbal bioenhancers, Natural, Healthy lifestyle, Bioavailability

Introduction

Herbal bioenhancers are natural substances that enhance bioavailability and effectiveness of drugs, nutrients, or any food components. They are considered as an alternative to synthetic bioenhancers owing to the lack of side effects and ability to work in synergy with the drugs. Herbal bioenhancers have been used in traditional medicine practices in different parts of the world since ancient times. These bioenhancers not only improve the effectiveness of the drugs but also reduce the toxicity and immunogenicity of the therapeutic agents. Few commonly used bioenhancers are:

1. **Piperine:** Piperine is the active constituent of black pepper and is known for its bioenhancement properties. It enhances the bioavailability of different drugs such as rifampicin, ciprofloxacin, and ampicillin by inhibiting the activity of cytochrome P450 enzymes.
2. **Curcumin:** Curcumin is the active constituent of turmeric and has anti-inflammatory and antioxidant properties. It enhances the bioavailability of different drugs such as cyclosporine, tamoxifen, and paclitaxel by inhibiting the activity of p-glycoprotein.
3. **Ginger:** Ginger is a natural bioenhancer that improves the bioavailability of different drugs such as propranolol, midazolam, and ibuprofen by inhibiting the activity of cytochrome P450 enzymes and UDP-glucuronosyltransferases.
4. **Ginseng:** Ginseng is a popular herb that is widely used in traditional medicine. It has been shown to enhance the bioavailability of different drugs such as cyclosporine, indinavir, and digoxin by inhibiting the activity of p-glycoprotein.
5. **Garlic:** Garlic is another herb that has been shown to enhance the bioavailability of different drugs such as saquinavir and ritonavir by inhibiting the activity of cytochrome P450 enzymes.
6. **Guggul:** Guggul is a resin that is extracted from the Commiphora mukul tree. It has been shown to enhance the bioavailability of different drugs such as simvastatin and fexofenadine by inhibiting the activity of cytochrome P450 enzymes.
7. **Grapefruit:** Grapefruit is a citrus fruit that contains furanocoumarins. These compounds inhibit the activity of cytochrome P450 enzymes and enhance the bioavailability of different drugs such as felodipine and cyclosporine.

8. **Licorice:** Licorice is a sweet root that has been used in traditional medicine for centuries. It has been shown to enhance the bioavailability of different drugs such as digoxin, prednisolone, and aspirin by inhibiting the activity of cytochrome P450 enzymes.
9. **Turmeric:** Turmeric is widely used in traditional medicine for its anti-inflammatory and antioxidant properties. It has been shown to enhance the bioavailability of different drugs such as curcumin and docetaxel by inhibiting the activity of p-glycoprotein.
10. **Milk Thistle:** Milk thistle is an herb that has been used in traditional medicine for centuries. It has been shown to enhance the bioavailability of different drugs such as indinavir and tamoxifen by inhibiting the activity of p-glycoprotein.
11. **Black Cohosh:** Black cohosh is an herb that has been used in traditional medicine for centuries. It has been shown to enhance the bioavailability of different drugs such as verapamil and cyclosporine by inhibiting the activity of p-glycoprotein.
12. **Green Tea:** Green tea contains polyphenols that have been shown to enhance the bioavailability of different drugs such as bortezomib and tamoxifen by inhibiting the activity of p-glycoprotein.
13. **Cat's Claw:** Cat's claw is an herb that has been used in traditional medicine for centuries. It has been shown to enhance the bioavailability of different drugs such as carbamazepine and leflunomide by inhibiting the activity of cytochrome P450 enzymes.
14. **Saw Palmetto:** Saw palmetto is an herb that has been used in traditional medicine for centuries. It has been shown to enhance the bioavailability of different drugs such as verapamil and prazosin by inhibiting the activity of p-glycoprotein.
15. **Astragalus:** Astragalus is an herb that has been used in traditional medicine for centuries. It has been shown to enhance the bioavailability of different drugs such as carboplatin and docetaxel by inhibiting the activity of p-glycoprotein.

Conclusion

After COVID-19, people are more motivated as well as concerned about natural ways to keep their body fit and immune system strong. This surge has brought bioenhancers in limelight. Herbal bioenhancers are natural substances that are considered as an alternative or adjuvant to chemotherapeutic agent. Owing to the no or mere side effects and ability to work in synergy with the drugs. Various herbal bioenhancers such as piperine, curcumin, ginger, ginseng, garlic, guggul, grapefruit, licorice, turmeric, milk thistle, black cohosh, green tea, cat's claw, saw palmetto, and astragalus are being used. They have not only increased the absorption of drug but shown to enhance the bioavailability of different drugs by inhibiting the activity of cytochrome P450 enzymes and/or p-glycoprotein.

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