Herb and Drug Interaction

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In the field of pharmacology, drug interactions can occur between various factors, including drugs themselves, as well as various environmental factors. This review focuses on the interaction between herbs and drugs, specifically highlighting the potential for herb-drug interactions. Herb-drug interactions can be complex and multifaceted, involving various mechanisms and processes.

Herbs and their active components have been used in traditional medicine for centuries. However, the use of herbal remedies is on the rise in Western medicine as well. While herbs offer many benefits, they also have the potential to cause interactions with other medications.

Herbs and drugs may affect the same biochemical processes, such as drug metabolism, transport, or receptor binding. These interactions can occur at various levels, from the level of the drug itself to the level of the biological response. Understanding these interactions is crucial for safe and effective medication use.

Herbs can be used to boost the effectiveness of certain medications or to counteract the adverse effects of others. This review explores the mechanisms behind these interactions and highlights the importance of considering herb-drug interactions in clinical practice.

In conclusion, herb-drug interactions are a complex and important area of research in pharmacology. Further studies are needed to better understand the mechanisms behind these interactions and to develop strategies for preventing and managing them.

References:


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Ginkgo biloba

In pharmacology, Ginkgo biloba is known for its use in improving cognitive function and memory. It is believed to enhance blood flow to the brain and improve its supply of oxygen. However, there is limited evidence to support its effectiveness and safety. It is important to consult a healthcare professional before using Ginkgo biloba, especially if you are taking other medications or have medical conditions.

St. John’s wort (Hypericum perforatum)

St. John’s wort is a popular natural alternative medicine used to treat depression, anxiety, and various other conditions. However, its use can lead to significant drug interactions due to its ability to inhibit cytochrome P450 (CYP) enzymes, which are responsible for metabolism of many drugs. The most potent CYP enzyme inhibited by St. John’s wort is CYP3A4, followed by CYP2C9 and CYP2C19.

Drug Interactions with St. John’s wort:
- Cimetidine (Tagamet): St. John’s wort increases the liver’s ability to break down cimetidine, potentially reducing its effectiveness.
- Diltiazem (Cardizem): St. John’s wort can increase the levels of diltiazem, which may lead to side effects such as flushing, headache, and dizziness.
- Cyclosporin (Sandimmune): St. John’s wort can increase the levels of cyclosporin, which may lead to increased side effects.
- Warfarin: St. John’s wort can interfere with warfarin’s anticoagulant effects, potentially leading to increased or decreased blood clotting.

It is crucial to inform your healthcare provider about any herbal products you are using, especially St. John’s wort, as it can significantly affect your medication regimen.
protease inhibitors in the presence of the aminopeptidase CYP2C9, which is a
hepatic enzyme that is responsible for the metabolism of saquinavir, and CYP3A4, an
enzyme that is responsible for the metabolism of amiodarone. The metabolism of
saquinavir and amiodarone is inhibited by the P-glycoprotein (P-gp) in the small intestine,
which reduces the absorption of these drugs.

Pharmacology of CYP3A4 in Humans

CYP3A4 is a member of the cytochrome P450 family of enzymes that are involved in
the metabolism of a wide range of drugs. CYP3A4 is expressed in the liver, intestine,
and other tissues, and it is responsible for the metabolism of many drugs, including
antiviral and antiretroviral drugs. CYP3A4 is one of the most important enzymes in
the metabolism of drugs, and its activity can be modulated by factors such as age,
sex, and genetic factors.

References

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<tr>
<td>Amitriptyline</td>
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| Ginkgo (Ginkgo biloba) | | |
| Warfarin           | Intracranial haemorrhage | Potent inhibitor of platelet aggregation factor |
| Aspirin            | Spontaneous hyphema     | Potent inhibitor of platelet aggregation factor |

| Ginseng (Panax ginseng) | | |
| Ethanol             | Increase alcohol clearance | Delay gastric Emptying and enzyme induction |
| Warfarin            | Decrease INR              | Additive effect |

| Garlic (Allium sativum) | | |
| Warfarin             | Increased INR             | Cause platelet dysfunction |
| Saquinavir           | Decrease AUC and $C_{\text{max}}$ | Induction of CYP 3A4 and P-Glycoprotein |
| Ritonavir            | Decrease AUC, unchanged $C_{\text{max}}$ | Minor induction of CYP3A4 and P-Glycoprotein |

* AUC: area under the plasma concentration-time curve, $C_{\text{max}}$: maximum plasma concentration, CYP: Cytochrome P 450, INR: international normalised ratio
From the available data, we can observe the presence of several studies focusing on the interactions between Ginkgo biloba and various medications. These interactions are often mediated by the CYP enzymes, which play a crucial role in the metabolism of many drugs.


