

Herb-Drug Interactions

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Introduction

We recently had the opportunity to hear John Chen speak at this year's Pacific Symposium in San Diego. John Chen holds doctoral degrees in both Oriental Medicine and Western Pharmacology, which gives him the ability to speak about the integration of Chinese herbs with Western medications at a very high level of expertise. He is also one of the authors of Chinese Medical Herbology and Pharmacology. Dr. Chen spoke on the topic of *Herb-Drug Interactions*.

The topic of herb-drug interactions is critical to every practitioner of Oriental herbal medicine, since most of our patients will be on one or more Western medications. Very often these patients will have conditions that could benefit greatly from our herbal formulas. Just as often, however, they will be hesitant to take Chinese herbs for fear of somehow disturbing the homeostasis they may have established with their meds. Further, we may have misgivings about even suggesting herbs for these patients, since we may have our own fears that something could go awry. Thus, it is in the best interests of our patients, as well as our own best interests, to understand this topic as best as possible.

The study of herb-drug interactions is among the newest areas of research affecting the modern practice of Medicine. Hence, information on specific interactions may simply not be available, as the research has not yet been conducted. For this reason, when approaching this topic in brief, our best strategy is to generalize basic understandings of pharmacology rather than to become overwhelmed by, for example, which specific receptors and ion channels are in play. (The reader is still encouraged to seek out what other information may be available about specific herbs and specific drugs. See recommended reference sources.)

So, that being said, there are two major arenas of herb-drug interaction: pharmacokinetics and pharmacodynamics. Pharmacokinetics is the realm of interactions that are either mechanical or chemical in nature. They include absorption, distribution, metabolism, and elimination. Pharmacodynamics has to do with how physiologic responses interplay: e.g. stimulant + stimulant vs. stimulant + sedative. This has to do with the synergy or antagonism of the actions of the herb and drug.

Pharmacokinetics

Absorption

This refers to the ability of the drug to get into the body, to be absorbed, usually from the gastrointestinal tract into the blood stream. The primary interactive problems affecting absorption are the following: drug-herb binding, alteration of stomach pH, increased gastrointestinal motility, and decreased gastrointestinal motility. For the first two situations, the best solution is to separate drug and herb dosing by 2-4 hours. The most common drugs we will see causing binding are the cholesterol lowering, bile acid binding resins, e.g. Questran, Colestid, Xenical. Watch for these and similar as many other Western drugs also should not be taken at the same time as these, and patients may be unaware. Some drugs or herbs, such as antacids, may change the pH of the stomach, which may prevent the dissolving of other drugs or herbs in the digestive tract, leading to poor absorption. Calcium carbonate containing products (Mylanta, TUMS, Hai Piao Xiao) and acid blockers (Prilosec, Pepcid, Huang Lian and some other Stomach Fire/Stomach Heat clearers) are examples.

Any laxative/purgative drug or herb or anti-diarrheal drug or herb can also affect the absorption of other substances. When the rate of passage through the intestines is accelerated, as with a laxative substance, the time for absorption of other substances is shortened, and absorption is lessened. Consequently, herbal dosing may need to be increased. On the other hand, any herbs or medications that have an anti-diarrheal effect will slow down the transit time, allowing more time for absorption, and increasing the bioavailability of other drugs or herbs. The dosage may need to be decreased to adjust for these changes in absorption. Opiates will generally slow down the GI tract.

Distribution

Distribution refers to the drug's ability to get to the target tissue in the body. Although it is fairly rare for an herb to interfere with the distribution of a drug, there are a group of drugs which have a narrow therapeutic index and which are highly protein bound and warrant special caution. Two fairly common prescription drugs in this group are Coumadin and Dilantin. The narrow therapeutic index means that there is a very small window in which the blood levels of these drugs are both effective and safe. Below that window, their effect is lost. Above that window, they can have unwanted (life-threatening) effects. Many of our patients are taking these drugs, and there is very little research to tell us which herbs may interact badly with either of these drugs. Rule of thumb: presume the herbs will interact unless clearly proven otherwise. Dosing strategy: start very low on the herbs, work up slowly, monitor the patient closely, and in cases where these drugs are "on board" cooperation with the prescribing M.D./D.O. is critical.

Metabolism

Metabolism has to do mainly with how quickly or how slowly the liver breaks down a drug or herb. If the liver is working quickly, the drug or herb will be broken down quickly, and less of that substance will be bioavailable. If the liver is working slowly, the

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breakdown will be slower, and more of the substance will be active. So, in the presence of liver metabolism altering drugs, we have to either increase or decrease the amount of herbs prescribed. Common enzyme inducers: Dilantin, Tegretol, Phenobarbital. Common enzyme inhibitors: Erythromycin, Tagamet, alcohol, and the anti-fungals (the “-conozoles”). In cases of liver disease, presume the metabolism of herbs is lessened.

Elimination

Elimination pathways for drugs and herbs include the urine (via the kidney), the bile (via the liver), the GI tract, the lungs, skin, and a number of other minor paths. Of these, the kidney is the most important. If there is any reason to suspect kidney damage, especially due to the use of certain drugs, it may be necessary to reduce the herbal dose to prevent unwanted effects. Currently, all herbs containing Aristolochic acid are considered nephrotoxic by the FDA. Some of these herbs include: ma dou ling, xi xin, guan mu tong, and guang fang ji. Be extremely cautious in using these in any patient with kidney compromise. Also, the aminoglycoside antibiotics, amphotericin B, and methotrexate are all potentially nephrotoxic and significant caution should be used when a patient is on these medications.

Pharmacodynamics

Pharmacodynamics refers to understanding how herbs or drugs affect body functions once the substances are absorbed. If the actions of the two substances are synergistic, they will reinforce and amplify one another’s effects. (As do ru xiang and mo yao.) If the actions are antagonistic, there may be a lessening of the desired effects. (As with ren shen and lai fu zi.) The research on herb/drug combinations that are synergistic or antagonistic is still very minimal, and sometimes these may be difficult to predict. Close monitoring of patients is critical to picking up these effects. In general, we should presume a synergistic effect when we have an herbal approach that parallels a Western approach – e.g. draining damp and diuretic use or clearing heat and anti-inflammatory use; and we should presume antagonism when our strategy is counter to the Western strategy – e.g. we want to boost Qi in a patient who is on sedative medications.

A primary and very important example of a pharmacodynamic interaction is the combination of warfarin (Coumadin) with a Blood-stasis-removing or Blood-activating herbs such as *dan shen* or *dang gui*. This herb-drug combination could result in excessive bleeding, a dangerous outcome for the patient. In this case, the practitioner should use caution, and consider using a low dose of these herbs with careful monitoring of the patient. On the other hand, stop-bleeding herbs with a pro-coagulant action could nullify the action of the Coumadin, risking the creation of blood clots.

There are four groups of herbs and drugs that have the highest risks for pharmacodynamic interactions. They are:

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- Sympathomimetics. These include herbs such as *ma huang*, which interfere with anti-hypertensive and anti-seizure drugs.
- Anticoagulants/anti-platelet. These herbs can interact with drugs such as warfarin, as described above.
- Diuretics. These herbs include such common herbs as *fu ling*. When taken with diuretic drugs they may cause unexpected changes in blood pressure, even causing hypotension in patients taking diuretic drugs for hypertension.
- Anti-diabetics. These include herbs such as *zhi mu* and *shi gao*, or *shan yao* and *huang qi* combinations, which could cause hypoglycemia when used with anti-diabetic drugs.

Conclusion

In his presentation, Dr. Chen provided the rudimentary tools that we need to begin to understand how herbs and drugs can be used together safely. It is not a cut and dried story, however, because much of the necessary research still needs to be done.

Drug-herb interaction is an important topic because we want to help our patients as much as we possibly can. They come to us with a long list of their medications, and yet we can plainly see that they could greatly benefit from our wonderful herbal medicines. Clearly, we want to help without hurting. To give herbs to patients on prescription medications requires some extra care and thought. To assume there will be no interactions is neither wise nor informed, however to neglect to give our patients the full benefit of our herbal pharmacopoeia is also not doing our full duty and is detrimentally conservative. With some extra care and attention, we can give our patients the best of both worlds, safeguarding the effects of their prescription medications, while offering the rich world of our own Chinese Medicine.

Sources for more information: [Chinese Medical Herbology and Pharmacology](#) by John and Tina Chen, Art of Medicine Press, 2004. The PDR for Herbal Medicines and The PDR for Nutritional Supplements. For more information on drug-herb interactions, there is a website called www.naturaldatabase.com which gives the interactions of most common Chinese herbs with many commonly used medications. This is a fee-based website, and you can try it out for a month for about \$10. Herb-Med and Herb-Med-Pro at www.herbmed.org is another good site. (Full access requires a subscription.) <http://nccam.nih.gov/> is the site of the National Center for Complementary and Alternative Medicine and has a wealth of free information and links.