# Natural Product/CYP450 Interactions

by Eric Yarnell, ND, RH(AHG)

2013

Interactions Based on Human Clinical Trials

<table>
<thead>
<tr>
<th>Agent</th>
<th>Induces</th>
<th>Inhibits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Repeatedly Documented, Minimal Dissenting Studies</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grapefruit, pomelo, bitter orange*</td>
<td></td>
<td>CYP3A4 (intestinal &gt;&gt; hepatic)</td>
</tr>
<tr>
<td><em>Hypericum perforatum</em>, hyperforin</td>
<td>CYP3A4 and/or Pgp (intestinal)</td>
<td></td>
</tr>
<tr>
<td><strong>Poorly Documented and/or Significant Dissenting Studies</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isothiocyanates (I3C, DIM)</td>
<td>CYP1A1, 1A2, 2E1 (Hakooz &amp; Hamdan 2007)</td>
<td></td>
</tr>
<tr>
<td>Phenylethyl isothiocyanate (watercress)</td>
<td></td>
<td>CYP2E1 (hepatic, intestinal?)</td>
</tr>
<tr>
<td><em>Allium sativum</em></td>
<td>CYP3A4 (dissenting study—Markowitz, et al. 2003a)</td>
<td></td>
</tr>
<tr>
<td>Piperine (<em>Piper longum</em>)</td>
<td></td>
<td>CYP3A4 (intestinal)</td>
</tr>
<tr>
<td>Artemisinin (<em>Artemisia annua</em>)</td>
<td>CYP3A4, CYP2C19 (Asimus, et al. 2007), CYP2D6</td>
<td></td>
</tr>
<tr>
<td>Sho-saiko-to (xiao chai hu tang)</td>
<td></td>
<td>CYP1A2 (Saruwatari, et al. 2003)</td>
</tr>
<tr>
<td><em>Angelica dahurica</em></td>
<td></td>
<td>CYP1A2, mild (Yi, et al. 2009)</td>
</tr>
<tr>
<td>Quercetin</td>
<td>CYP3A5 (Duan, et al. 2012)**</td>
<td></td>
</tr>
<tr>
<td>Keishi-bukuryo-gan (guizhi fu ling wan)</td>
<td></td>
<td>CYP1A2, mild (Saruwatari, et al. 2012)</td>
</tr>
<tr>
<td>Genistein (soy)</td>
<td>CYP3A, mild (Xiao, et al. 2012)</td>
<td></td>
</tr>
<tr>
<td><em>Panax ginseng</em></td>
<td>CYP3A4, hepatic, mild (Malati, et al. 2012)</td>
<td></td>
</tr>
<tr>
<td><em>Panax quinquefolius</em></td>
<td>CYP2C9 intestinal</td>
<td></td>
</tr>
</tbody>
</table>

* Much less potent than grapefruit.  ** Inhibited CYP3A in rats (Umathe, et al. 2008)
Herbs shown to NOT interact in clinical trials

*Actaea racemosa* (Gurley, et al. 2006)

*Angelica tenuissima* (Yi, et al. 2009)

*Camellia sinensis* (Donovan, et al. 2004b)


*Eleutherococcus senticosus* (Donovan, et al. 2003)


*Piper methysticum* (Gurley, et al. 2008a and 2007)

*Punica granatum* (Farkas, et al. 2007)

*Serenoa repens* standardized extract (Gurley, et al. 2004; Markowitz, et al. 2003c)

*Silybum marianum*—silymarin extract (Gurley, et al. 2006; Mills, et al. 2005)

*Vaccinium macrocarpon* juice (Lilja, et al. 2007; Grenier, et al. 2006); one dissenting study possibly not related to CYP interactions (Mohammed Abdul, et al. 2008)

*Valeriana officinalis* (Donovan, et al. 2004)

References


Markowitz JS, Donovan JL, Devane CL, et al. (2003c) “Multiple doses of saw palmetto (Serenoa repens) did not alter cytochrome P450 2D6 and 3A4 activity in normal volunteers” Clin Pharmacol Ther 74:536-42.


