St. John’s wort Reduces Efficacy of Anticancer Drug Gleevec


Imatinib (Gleevec or Glivec, Novartis Pharmaceuticals Corp, East Hanover, NJ) is used to treat cancer. Imatinib is metabolized by the cytochrome CYP 3A4 enzyme system. Drugs that induce this enzyme also cause a reduction in the plasma concentration of imatinib. This results in a reduction in the efficacy of imatinib. St. John’s wort (SJW, Hypericum perforatum) can induce CYP 3A4 and may alter imatinib pharmacokinetics (the metabolism, absorption, and excretion of a drug). There is the possibility that cancer patients may self-medicate with SJW to alleviate their depression. The aim of this study was to assess the degree to which SJW affects imatinib pharmacokinetics.

Twelve healthy volunteers participated in this open-label, fixed-sequence study conducted at the University of Pittsburgh General Clinical Research Center. Subjects abstained from alcohol, caffeine, and grapefruit products. Subjects took 400 mg imatinib before the oral administration of SJW and during SJW administration (SJW extract: Kira [LI 160], Lichtwer Pharma AG, Berlin, Germany), 300 mg three times a day for 14 days. Blood and urine samples were evaluated.

According to the urine samples, SJW extract induced cytochrome P450 3A in the subjects. SJW extract influenced the pharmacokinetics of imatinib by causing a clinically significant decrease (average 30%) in the imatinib AUC (area under the plasma concentration curve) in all subjects.

According to the authors, SJW could cause imatinib treatment failure. The authors conclude that patients with cancer who are taking imatinib should avoid taking SJW, or in the event that SJW was indicated, the imatinib dosage should be increased to compensate for its increased clearance (reduction in efficacy).

This is yet another in a series of research reports that have confirmed the effect of SJW on various drugs that are metabolized by the CYP 3A4 and p-glycoprotein enzyme systems. The authors failed to note that imatinib is also a substrate of p-glycoprotein. It is well known that the handful of potent medications that are substrates of both 3A4 and p-glycoprotein will be greatly affected by SJW, since it induces both. Consumers who are considering using SJW to self-treat mild to moderate depressive states and who are also using conventional medications are cautioned to check with their pharmacist or physician to determine whether SJW has been determined to interact with these medicines.

—Heather S. Oliff, PhD

St. John’s wort Hypericum perforatum. Photo © 2005 stevenfoster.com

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