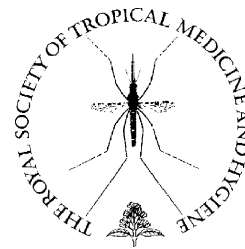




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CORRESPONDENCE

Artemisinin in traditional tea preparations of *Artemisia annua*

F.H. Jansen comments in a Letter to the Editor (Jansen 2006) on two recent studies by our group (Mueller et al., 2004; R ath et al., 2004) reporting on chemical, pharmacokinetic and clinical efficacy data on traditional tea preparations of the Chinese medicinal plant *Artemisia annua*, the source of the antimalarial compound artemisinin.

Jansen is right in warning against an uncritical use of *A. annua* tea preparations, which may promote the development of resistance. However, I would like to respond to two points:

(1) Jansen reports that he found only 24.2 mg/l artemisinin in a tea preparation from *A. annua* herb, in contrast to 36.5–94.5 mg/l reported by our group for six differently prepared teas. Jansen states that the methods for his assay were ‘‘based on those published in the International Pharmacopoeia (2003)’’. The two methods given in this Pharmacopoeia are devised for the analysis of pure compounds, and at least one of them (photometric determination after direct alkali treatment of the sample) is likely to give incorrect results for plant extracts.

The lipophilic compound artemisinin is solubilized in the tea by other plant constituents. The extent of solubilization may vary between different plant samples and different extraction procedures. An optimization of the extraction procedure requires appropriate analytical methods, such as those described in our study.

(2) Jansen expresses his opinion that ‘‘the concentration of artemisinin in *A. annua* tea is far too low to be responsible for the antimalarial activity’’. In our pharmacokinetic trial in 10 human volunteers, we determined a peak plasma level of 240 ng artemisinin per ml. This is 26 times higher than the minimum artemisinin concentration (9 ng/ml) required for growth inhibition of *Plasmodium falciparum* in vitro, reported by Alin and Bjorkman (1994).

The efficacy and safety of herbal medicines is a subject on which many people hold strong opinions, positive or negative. We should emphasize data rather than opinions. *Artemisia annua* preparations were (and are) used in traditional Chinese medicine. We tested the efficacy of such preparations. In the dose regimen used, a reduction of parasitaemia and a resolution of clinical symptoms were observed. However, the effect was inferior to that of modern antimalarials and resulted in unacceptably high recrudescence rates. This prevents a responsible use of this medication in therapeutic practice.

Conflicts of interest statement

Lutz Heide is a full professor of the University of T bingen and has no commercial interest in antimalarial preparations.

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[This correspondence is now closed – Editor-in-Chief].
Available online 15 May 2006