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Ancient Chinese methods are remarkably effective for the preparation of artemisinin-rich extracts of Qing Hao with potent antimalarial activity

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Ancient Chinese herbal texts as far back as the 4th Century Zhou hou bei ji fang describe methods for the use of Qing Hao (*Artemisia annua*) for the treatment of intermittent fevers. Today, the *A. annua* constituent artemisinin is an important antimalarial drug and the herb itself is being grown and used locally for malaria treatment although this practice is controversial. Here we show that the ancient Chinese methods that involved either soaking, (followed by wringing) or pounding, (followed by squeezing) the fresh herb are more effective in producing artemisinin-rich extracts than the usual current method of preparing herbal teas from the dried herb. The concentrations of artemisinin in the extracts was up to 20-fold higher than that in a herbal tea prepared from the dried herb, but the amount of total artemisinin extracted by the Chinese methods was much less than that removed in the herbal tea. While both extracts exhibited potent in vitro activities against *Plasmodium falciparum*, only the pounded juice contained sufficient artemisinin to suppress parasitaemia in *P. berghei* infected mice. The implications of these results are discussed in the context of malaria treatment using *A. annua* infusions

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