Antifilarial activity of caffeic acid phenethyl ester on Brugia pahangi in vitro and in vivo.

Al-Abd NM¹,², Nor ZM¹, Junaid QO¹, Mansor M³, Hasan MS³, Kassim M³.

Abstract
Lymphatic filariasis (LF) is a vector borne disease caused by parasitic worms such as Wuchereria bancrofti, Brugia malayi and B. timori, which are transmitted by mosquitoes. Current therapeutics to treat LF are mainly microfilarcidal, and lack activity against adult worms. This set back, poses a challenge for the control and elimination of filariasis. Thus, in this study the activities of caffeic acid phenethyl ester (CAPE) against the filarial worm B. pahangi and its bacterial endosymbiont, Wolbachia were evaluated. Different concentrations (2, 5, 10, 15, 20 µg/ml) of CAPE were used to assess its effects on motility, viability and microfilarial (mf) production of B. pahangi in vitro. Anti-Wolbachial activity of CAPE was measured in worms by quantification of Wolbachial wsp gene copy number using real-time polymerase chain reaction. Our findings show that CAPE was found to significantly reduce adult worm motility, viability, and mf release both in vitro and in vivo. 20 µg/ml of CAPE halts the release of mf in vitro by day 6 of post treatment. Also, the number of adult worms recovered in vivo were reduced significantly during and after treatment with 50 mg/kg of CAPE relative to control drugs, diethylcarbamazine and doxycycline. Real time PCR based on the Wolbachia ftsZ gene revealed a significant reduction in Wolbachia copy number upon treatment. Anti-Wolbachia and antifilarial properties of CAPE require further investigation as an alternative strategy to treat LF.

KEYWORDS: Brugia pahangi; Lymphatic filariasis; Wolbachia; antifilarial drugs; caffeic acid phenethyl ester; microfilarcidal
