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**In-vitro Filaricidal Activity and Toxicity of Selected Oxaboroles**

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**ABSTRACT**

**Background:** Onchocerciasis elimination is being retarded by the absence of a safe and effective drug of choice against the adult worm, the latter may live in the human body for up to 18 years. Moreover, there is resistance in veterinary medicine to Ivermectin which is currently the drug of choice. There are fears that the mechanism may eventually apply to human medicine. This underscores the need to identify new drugs that can effectively treat the disease. We report the filaricidal activity of synthetic boron containing organic compounds (oxaboroles) on Onchocerca ochengi, a model parasite for O. volvulus. These compounds have shown a broad spectrum activity against some parasitic diseases.

**Methods:** A total of five synthetic oxaboroles (UBAM-01, UBAM-02, UBAM-03, UBAM-04 and UBAM-05) were selected and screened for filaricidal activity in vitro against O. ochengi. The macrofilaricidal activity was assessed based on motility score of adult male worms as well as inhibition of MTT/formazan formation, while the microfilaricidal activity was based on microfilariae motility score. Cytotoxicity of the active compounds was assessed on monkey kidney epithelial cells in vitro and the selectivity indices (SI) of the compounds determined. Preliminary acute toxicity of the promising compounds was investigated in mice.

**Results:** Of the five compounds investigated, two (UBAM-03 and UBAM-05) showed both macrofiliaricidal and microfiliaricidal activities. The IC50 of UBAM-03 and UBAM-05 were 5 M and 2.5 M respectively on adult worms, and 18.8 M and 12.5 M on microfilariae respectively, while their IC100 were 10 M and 5 M for adult worms and 25 M for microfilariae respectively. In-vitro cytotoxicity of the two active compounds on monkey kidney epithelial cells showed that UBAM-03 and UBAM-05 were more selectively active on adult worms with SI values of 3.8 and 7.8 respectively, than on microfilariae with SI values of 1 and 1.4 respectively. No acute toxicity was observed in BALB/c mice when the compounds were tested at 2 times their IC100s on adult worms in preliminary acute toxicity studies.

**Conclusion:** UBAM-03 and UBAM-05 could serve as suitable hit compounds for the discovery of novel drugs on onchocerciasis.