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Abstract: A novel mosquito trapping system, the BG-Sentinel[®] trap, was evaluated as a monitoring tool for adult *Aedes aegypti* in field tests in the city of Belo Horizonte, Brazil. Human landing/biting collections, a gas-powered carbon dioxide trap, and a Fay-Prince trap with only visual cues served as references to evaluate the efficacy of the new trap. The BG-Sentinel is a simple suction trap that employs upward-directed air currents, as well as visual cues to attract mosquitoes. The trap was tested with a new dispenser system (BG-Lure[®]) that releases artificial human skin odors and needs no carbon dioxide. In comparison to the two other traps, the BG-Sentinel caught significantly more *Ae. aegypti*. Although human landing rates were the highest, there was no significant difference between human landing rates and the capture rates of the BG-Sentinel trap. This indicates that the trap can be considered as an acceptable alternative to human landing/biting collections in the surveillance of adult hostseeking dengue vectors. The addition of the BG-Lure to the gas-powered CO₂ trap greatly increased its efficacy. This combination, however, was not significantly more effective than the BG-Sentinel without CO₂. In a 6-month comparison between the BG-Sentinel and a sticky ovitrap for gravid females, the BG-Sentinel proved to be a far more efficient and sensitive tool to measure the density of *Ae. aegypti* populations.

Key words: *Aedes aegypti*, *Stegomyia aegypti*, surveillance, dengue, kairomones, traps