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# Prevalence and dynamics of clinically significant bacterial contaminants in herbal medicines sold in East Africa from 2000 to 2020: a systematic review and meta-analysis



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## Abstract

**Background:** Infectious diseases remain a leading cause of mortality and morbidity around the world, and those caused by bacteria are common in the East African region. In this region, trade and consumption of herbal medicine has been expanding in the recent decades. Herbal medicines may be contaminated with pathogenic bacteria; however, there is limited information due to fragmented studies in East Africa. In this meta-analysis, we critically analyzed original research related to the incidence of pathogenic bacterial contaminants of HM in the East African region since 2000. The aim was to create a comprehensive understanding of the extent and dynamics of bacterial contamination in HM, to guide future research and concerted public health protection in the region.

**Methodology:** The study was conducted according to the standards of the Preferred Reporting Items for Systematic Reviews and Meta-analyses. We searched and evaluated published articles from eleven electronic databases (Google Scholar, PubMed, HerbMed, MEDLINE, Science Direct, Scifinder Scholar, Cochrane Library, International Pharmaceutical Abstracts, EMBASE, Biological Abstracts and Commonwealth Agricultural Bureau Abstracts). Prevalences of different bacterial species, Cochran's *Q* test, and the *I*<sup>2</sup> statistic for heterogeneity were evaluated using a software called MedCalcs. Random and fixed effects models were used to determine the pooled prevalence of clinically significant bacteria from studies which were included in this meta-analysis. The potential sources of heterogeneity were examined through sensitivity analysis, sub-group analysis, and meta-regression at 95% level of significance.

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