**Quality of Annona muricata Commercially Available Products**

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**Background and aims.** *Annona muricata*, also known as graviola, is a herbal product commonly used by people living with cancer in South America and the Caribbean region (1-5). The bioactive constituents of *A. muricata*, annonaceous acetogenins had demonstrated anticancer activity (6,7). This study aimed to evaluate the pharmaceutical quality of a selection of commercially available *A. muricata* products.

**Methods.** An online search identified seven commonly available *A. muricata* products. Capsule and powder formulations from a single batch were purchased. Uniformity of the capsule contents weight was assessed. Thin-layer chromatography (TLC), high-performance liquid chromatography (HPLC), liquid chromatography–mass spectroscopy (LCMS), low-resolution mass spectrometry (MS/MS) and nuclear magnetic resonance spectroscopy (NMR) were employed to quantify the bioactive constituent annonacin and to identify annonaceous acetogenins. Microbiological analysis was carried out in accordance with the British Pharmacopoeia (BP). Concentration of heavy metals were analysed by inductive coupled plasma mass spectrometry (ICP-MS).

**Results.** The total daily dose of *A. muricata* recommended on the labels ranged from 500-4000 mg daily. Of the seven products analysed, one product contained 57% less than the content reported on the product label. Results from TLC and NMR identified the presence of annonacin in all products. HPLC and LCMS data indicated the annonacin concentration ranged from 1.05 to 3.09 mg/g, with the presence of a range of annonaceous acetogenins. Microbiological analysis identified one of the seven products with a total aerobic microbial count above the United States Pharmacopoeia (USP) limit. All products were reported to have a heavy metal concentration within the BP and USP limits.

**Conclusion/Discussion.** This study identified a significant variation in quality and safety indictors of *A. muricata* leaf products evaluated. This may have important implications for clinicians and people living with cancer who choose to use this herbal product.

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