In vitro evaluation of antioxidant properties, anti-hepatocellular carcinoma activity and hepatotoxicity of Borututu infusion and dietary supplements

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Cochlospermum angolensis Welw. (borututu) is widespread in parts of Angola, as the name indicates, and belongs to the Cochlospermaceae family. Its bark infusion is used in the traditional medicine of Angola for the treatment of hepatic diseases and for the prophylaxis of malaria [1,2]. In the present work, the infusion and dietary supplements of borututu, widely used for their hepatoprotective effects, were submitted to an evaluation of bioactive compounds (phenolics and flavonoids), antioxidant activity (expressed as DPPH scavenging activity, reducing power, β-carotene bleaching inhibition, and TBARS formation inhibition), anti-hepatocellular carcinoma activity (HepG2 tumour cell line) and hepatotoxicity (non-tumour liver primary culture PLP2). Borututu infusion gave high amounts of total phenolics (132.26 mg of gallic acid equivalents/g) and flavonoids (17.88 mg of catechin equivalents/g), as also high antioxidant activity (EC_{50} ≤ 170 μg/mL) in all the assays and also revealed anti-hepatocellular carcinoma activity (GI_{50} = 146 μg/mL) without toxicity for non-tumour liver cells (GI_{50} > 400 μg/mL). The bioactive properties (antioxidant and antitumour) of the infusion were positively correlated with phenolics and flavonoids content. This plant revealed antioxidant properties with EC_{50} values lower than the daily recommended dose, but infusion was more active than dietary supplements. Moreover, dietary supplements, up to 400 μg/mL, did not inhibit the growth of hepatocellular carcinoma cell line (HepG2).

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