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**Cytotoxic and Multidrug Resistance Reversal Activity of a Vegetable, ‘Anastasia Red’, a Variety of Sweet Pepper.**

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The vegetable, Anastasia Red, *Capsicum annuum* L. var. *angulosum* Mill. (Solanaceae) was successively extracted with hexane, acetone, methanol and 70% methanol, and the extracts were further separated into a total of 21 fractions by silica gel or octadecylsilane (ODS) column chromatography. The biological activities of extracts and fractions were determined. These extracts showed relatively higher cytotoxic activity against two human oral tumor cell lines (HSC-2, HSG) than against normal human gingival fibroblasts (HGF), suggesting a tumor-specific cytotoxic activity. The cytotoxic activity of these extracts was enhanced by fractionation on silica gel [H2, A2, M1-M3] or ODS column chromatography [70M]. Several fractions [H2, H4, H5, A1, A2, A3, A5, A6, A7, M2] reversed the multidrug resistance (MDR) phenotype with L5178 mouse lymphoma T cells, more efficiently than (+/-)-verapamil. The extracts and fractions did not show any detectable anti-human immunodeficiency virus (HIV) or anti-*Helicobacter pylori* activity. Thus, this study suggests the effective and selective antitumor potential of ‘Anastasia Red’ of sweet pepper for further phytochemical and biological investigation.