Anti-proliferative Activity of α-mangostin from Mangosteen (Garcinia mangostana Linn.)

Chavalit Sittisombut,1 Perayot Pamolsilapatham1 and Françoise Raynaud2

Abstract

As part of ongoing research on development of standard extract from fruit hull of mangosteen (Garcinia mangostana Linn.) and application in pharmaceutical and cosmetic industry, α-mangostin was purified from the extract of mangosteen fruit hull. α-Mangostin exhibited high anti-proliferative activity against human colon cancer cells (HCT116 and HT29, at 80.0 % and 75.5 % inhibition, respectively) and human prostate cancer cell (PC3, at 78.5% inhibition). This result showed that mangosteen and α-mangostin would be good candidate for therapeutic application for cancer treatment.

Keywords: anti-proliferative activity, α-mangostin, mangosteen, Garcinia mangostana

Introduction

Mangosteen (Garcinia mangostana Linn., Clusiaceae) is a tropical tree and well-recognized as ‘the queen of fruits’ according to its best taste of tropical fruits (Pedraza-Chaverri et al., 2008). The fruit hull of mangosteen has been used as medicine by Southeast Asians for centuries in the treatment of some health problems such as skin infections, wounds (Mahabusarakam et al., 1987), and amoebic dysentery (Garnett and Sturton, 1932). It has been reported that mangosteen exhibits antimicrobial, antioxidant and anti-inflammatory activities (Gopalakrishnan et al., 1980; Williams et al., Ngawhirunpat et al., 2010). Studies have been designed to examine the anticancer activities of xanthones isolated from mangosteen fruit hull in cancer cells, hepatocellular carcinoma, SKBR3 human breast cancer (Moongkarndi et al., 2004) and human leukemia (Matsumoto et al., 2003). α-Mangostin (Figure 1), a major xanthone in mangosteen, showed the highest inhibitory activity (IC_{50} 10 \mu M) in leukemic cell lines. Phytochemical studies have revealed that the pericarp of mangosteen is a source of xanthones,