%LRSRO\HWKHU RI PHGLFLQDO SODQWV ZLWK DQWLFDQFHU HI¿FD

According to IR, 13C, 1H NMR, APT, 1D NOE, 2D heteronuclear 1H/13C HSQC and 2D DOSY experiments the main chemical constituent of high-molecular water-soluble fractions from di erent species of comfrey and bugluss (family Boraginaceae) was found to be poly[oxy-1-carboxy-2-(3,4-dihydroxyphenyl) ethylene] or poly[3-(3,4-dihydroxyphenyl) glyceric acid] (PDPGA). e regular polyoxyethylene chain is the backbone of this polymer molecule. 3,4-Dihydroxyphenyl and carboxyl groups are regular substituents at two carbon atoms in the chain. Such biopolymer has not been known and has been identi ed for the rst time. is compound is a representative of a new class of natural polyethers with a residue of 3-(3,4-dihydroxyphenyl) glyceric acid as the repeating unit. PDPGA exhibited anticomplementary, antioxidant, anti-in ammatory and wound healing properties. PDPGA exerted anti-cancer e cacy in-vitro and in-vivo against human prostate cancer (PCA) cells via targeting androgen receptor (AR), cell cycle arrest and apoptosis without any toxicity, together with a strong decrease in prostate speci c antigen (PSA) level in plasma. PDPGA suppressed the growth and induced death i androgen-dependent (LNCaP) and -independent (22Rv1) PCA cells, with comparatively lesser cytotoxicity towards non-neoplastic human prostate epithelial cells PWR-1E. PDPGA caused G1 phase arrest of cell cycle progression in PCA ce through modulating the expression of cell cycle regulators, especially an increase in cyclin-dependent kinase inhibitors (p21 and p27). PDPGA induced apoptotic death by activating caspases, and also strongly decreased AR and PSA expression revea some of the plausible underlying mechanisms. In 22Rv1 xenogra model male athymic nude mice with 22Rv1 xenogra s was administered orally 5.0 mg/kg dose of PDPGA for ve weeks. e tumor volume per mouse was decreased by 88%. Plasma analyses revealed that PDPGA administration caused a strong dose-dependent decrease in PSA levels by 87%. Overall, t study identi es PDPGA as a potent agent against PCA without any toxicity, and supports its pre-clinical and clinical testing

Biography

Notes: