Curcumin is a potential natural anticancer drug with low oral bioavailability because of poor water solubility. The aqueous solubility of curcumin is enhanced by means of modification with the carbohydrate units. Polymerization of the curcumin-containing monomer with carbohydrate-containing monomer gives the water-soluble glycopolymer bearing curcumin pendant residues. The obtained copolymers (**P1** and **P2**) having desirable water solubility were well-characterized by infrared spectroscopy (IR), nuclear magnetic resonance (NMR), gel permeation chromatography (GPC), UV–Vis absorption spectroscopy, and photoluminescence spectroscopy. The copolymer **P2** with a molar ratio of 1:6 (curcumin/carbohydrate) calculated from the proton NMR results exhibits a similar anticancer activity compared to original curcumin, which may serve as a potential chemotherapeutic agent in the field of anticancer medicine.

The prepared glycopolymer (**P2**) bearing curcumin residues exhibit a similar anticancer activity to original curcumin.