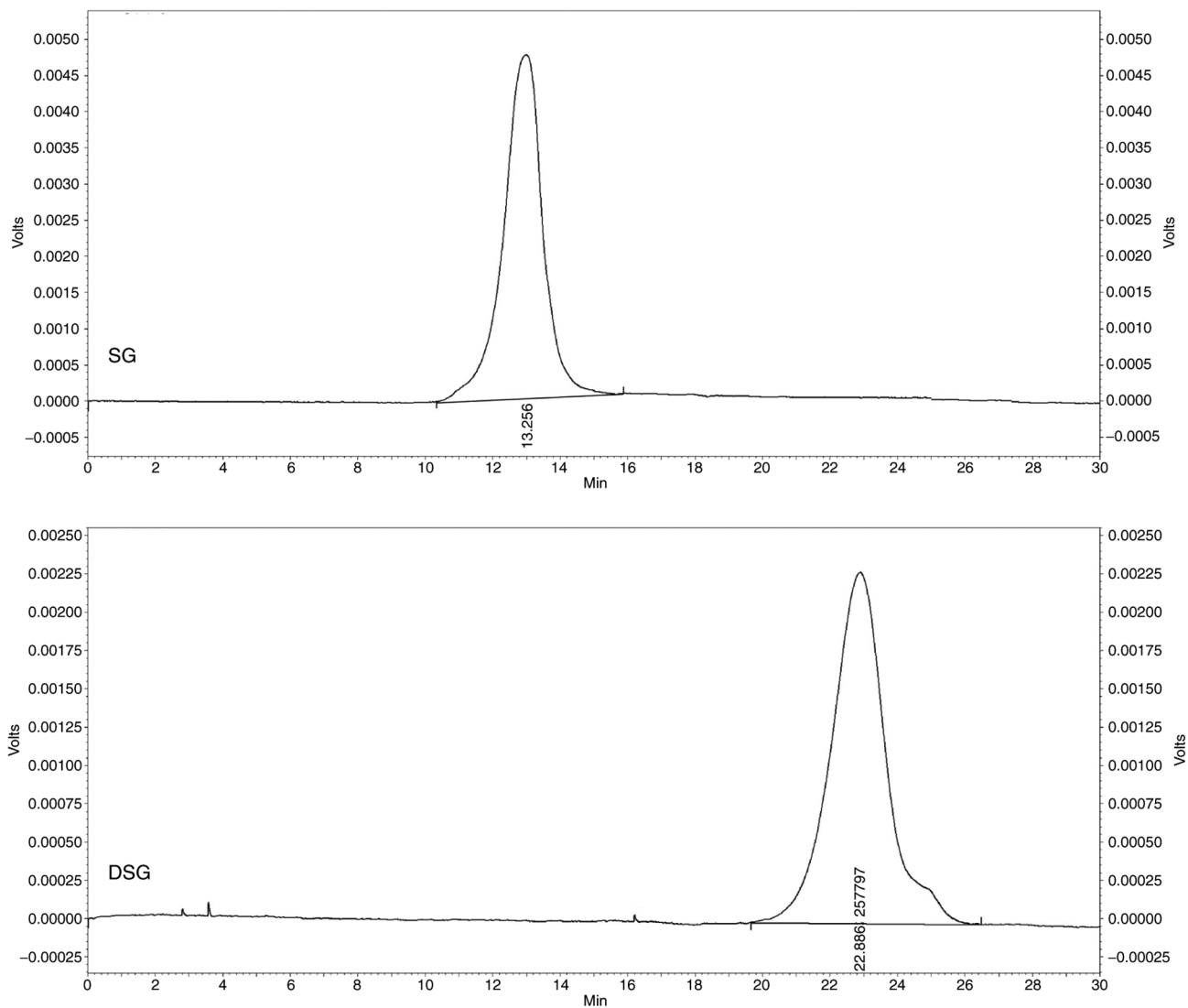


Figure S1. Molecular weight estimation and sulfated content determination of SG and DSG from *Gracilaria fisheri* by gel permeation chromatography and the barium chloride-gelatin methods. SG, sulfated galactan; DSG, degraded sulfated galactan; Mw, weight-average molecular weight; Mn, number-average molecular weight; Mz, z-average molecular weight.



Samples	Sulfate content (%)	Molecular mass moments (g/mol or Da)		
		Mw × 10 ³	Mn × 10 ³	Mz × 10 ³
SG	11.41 ± 0.14	217.45	185.25	262.09
DSG	12.92 ± 0.07	7.87	5.55	12.73

Figure S2. Structural characterization of SG and DSG by FTIR and NMR analyses. (A) FTIR spectra, (B) ^1H -NMR spectra and (C) ^{13}C -NMR spectra (21). SG, sulfated galactan; DSG, degraded sulfated galactan; FTIR, Fourier-transform infrared; NMR, nuclear magnetic resonance; ppm, parts per million.

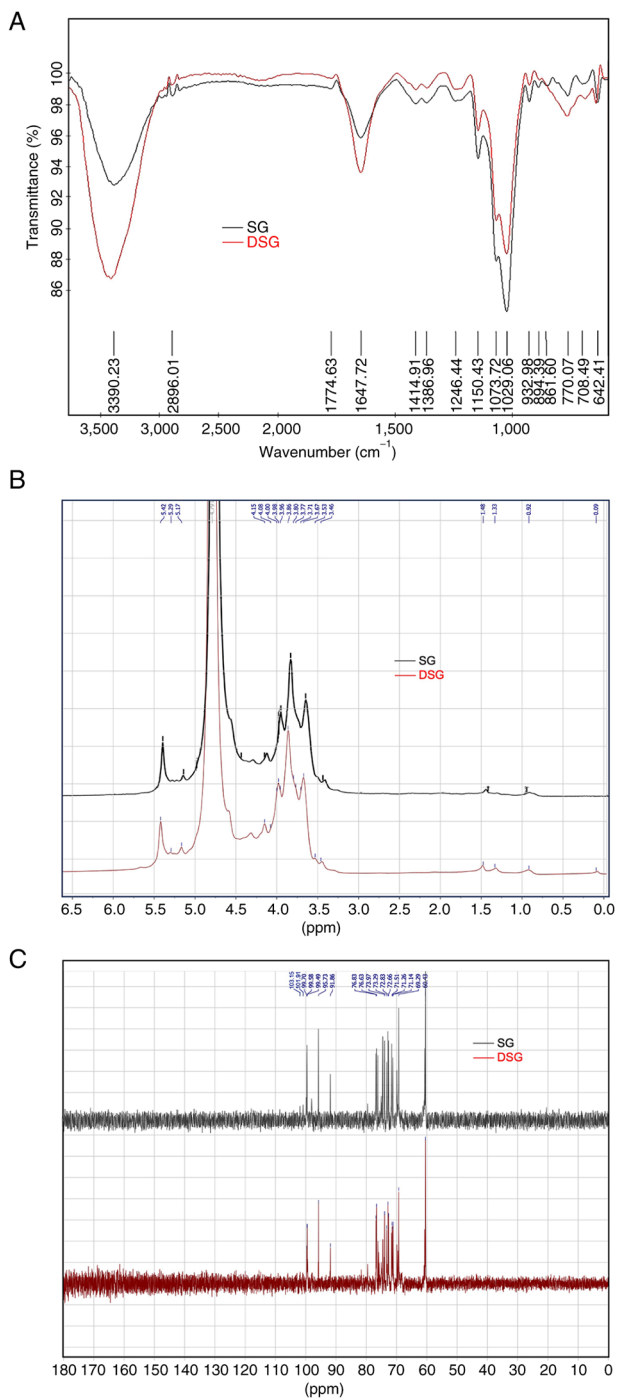


Figure S3. Cell morphology and membrane permeability of MCF-10A cells following treatment with DOXO (0.5 $\mu\text{g}/\text{ml}$), SG and DSG (both 1,000 $\mu\text{g}/\text{ml}$) for 24 h. (A) Phase-contrast micrographs presenting cellular morphology after treatment (scale bar, 75 μm). Red arrows indicate morphological changes in MCF-10A cells. (B) Immunofluorescence micrographs illustrating Hoechst and propidium iodide dual staining intensity (scale bar, 75 μm). SG, sulfated galactan; DSG, degraded sulfated galactan; DOXO, doxorubicin; NC, normal control.

