Supporting content

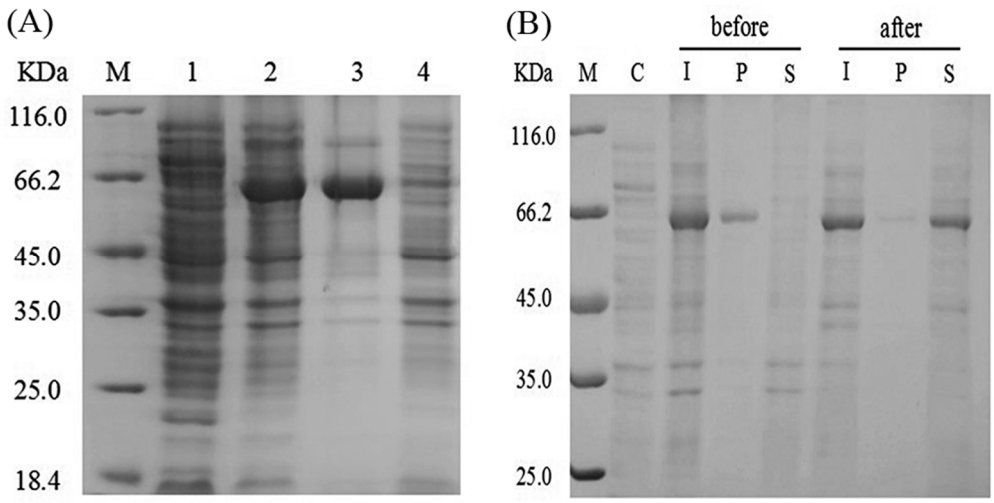

Figure S1. SDS-PAGE analysis of XcAS expression in *E. coli* JM109[DE3] before (A) and after (B) process conditions optimization. (A) XcAS expression before optimization. Lane 1, total cell protein of *E. coli* JM109/pet28a. Lane 2, total cell protein of *E. coli* JM109/pet28a-*xcas*. Lane 3, pellet fraction after cell sonication of *E. coli* JM109/pet28a-*xcas*. Lane 4, supernatant after cell sonication of *E. coli* JM109/pet28a-*xcas*. (B) XcAS expression after optimization. M, protein marker. C, total cell protein of *E. coli* JM109/pet28a. I, total cell protein of *E. coli* JM109/pet28a-*xcas*. P, the pellet fraction after cell sonication of *E. coli* JM109/pet28a-*xcas*. S, the supernatant after cell sonication of *E. coli* JM109/pet28a-*xcas*.

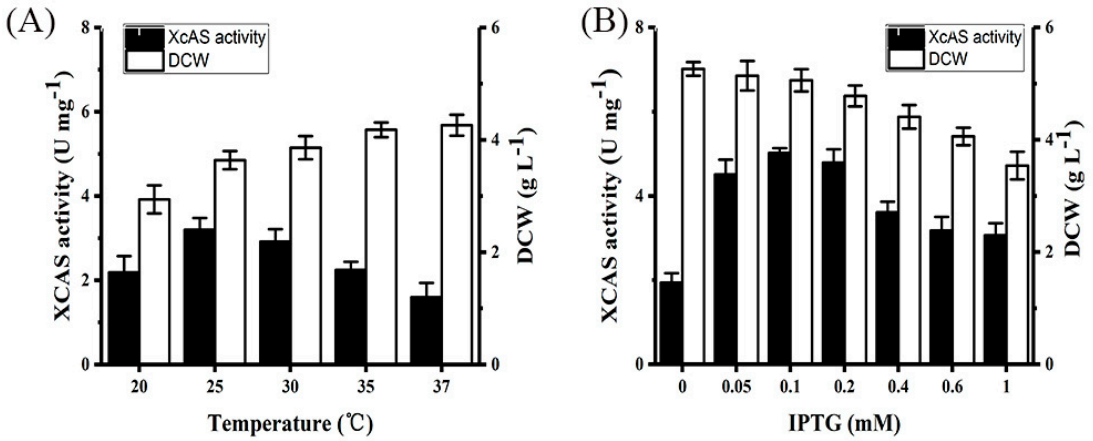

Figure S2. Effects of different temperatures (A) and IPTG concentrations (B) on *E. coli* cell growth and XcAS hydrolysis activity in *E. coli* JM109/pet28a-xcas. Biomass expressed as dry cell weight (DCW) (white), while intracellular XcAS crude activity (black). The crude enzyme activity was analyzed by 3,5 dinitrosalicylic acid (DNS) colour reaction by supernatant of *E. coli* JM109/pet28a-*xcas* cell extracts. All assays were performed in triplicate in three independent experiments.

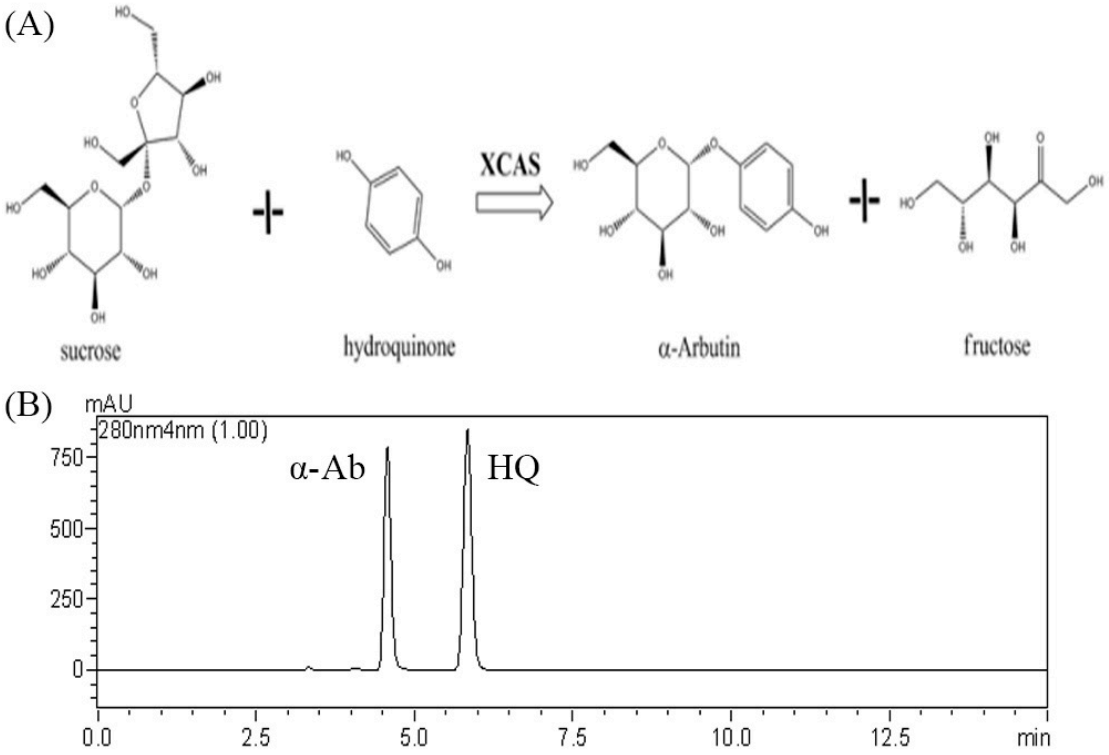

Figure S3. Structural determination of the transglycosylated product. (A) Synthesis of α-arbutin by the transglycosylation reaction using XcAS. (B) HPLC analyses of α-arbutin synthesis by DGAS.