

Primary recovery of miraculin from miracle fruit, *Synsepalum dulcificum* by AOT reverse micellar system

ABSTRACT

Miracle fruit, *Synsepalum dulcificum*, contains a glycoprotein known as miraculin. After consuming this glycoprotein, sour foods taste sweet and the effect lasts for up to 4 h. With increasing demand for natural and “low-calorie” sweeteners, the use of miraculin as an additive is increasing enormously in the food, medicine and cosmetic industries. In this study, we used reverse micelles formed from a sodium di (2-ethylhexyl) sulfosuccinate (AOT)/isooctane system to purify miraculin from *S. dulcificum*. We studied factors affecting purification performance, such as surfactant (AOT) concentration and the pH of the crude during forward extraction. During backward extraction, we examined the effects of NaCl concentration, the pH of the aqueous phase and addition of isopropanol. We found that 0.1 mol/L AOT/isooctane solution mixed with crude extract at pH 8 during the forward extraction stage and 0.5 mol/L NaCl solution at pH 11 during the backward stripping stage were optimal purification conditions, from which 22% miraculin was recovered with a purity of 94.8%.

Keyword: Reverse micelles; Surfactant; Liquid–liquid extraction; Separation; Purification