

# Coal-vitamin medium for improved scheme of isolating biosurfactant-producing actinomycetes of rare species from soil samples

## Abstract

A simplified scheme for the isolation of biosurfactant-producing actinomycetes from soils was developed using different combinations of pretreatments and selective media supplemented with antifungal agent, cycloheximide (0.1 g/l). Pretreatments using hot air-drying techniques as well as soil suspension in phosphate buffer solution (5 mM, pH 7.0) treated with peptone (6%) at 45 °C for 10 min proved to be effectual in decreasing the number of vegetative bacterial cells while preserving many actinomycetes spores. Out of 945 actinomycetes isolates collected from various types of soils, 126 isolates of distinct morphologies were screened for biosurfactant production and 28 isolates were proven positive with 18 from contaminated areas while 10 of the positive isolates were from relatively non-contaminated soils. The combination of coal-vitamin medium, supplemented with antifungal agent, cycloheximide (0.1 g/L), on soil samples treated with peptone (6%) and SDS (0.05%) in 5 mM phosphate buffer, pH 7.0, produced the highest number of actinomycetes isolates recovery. Initial screenings for biosurfactant production using combination of microplate assay, drop collapse method, emulsification activity, and tributyrin agar test were found adequate for copious isolates as these methods also assessed for both low- and high-molecular mass biosurfactant types and worked well for high throughput screening analyses.

## Keywords

Drop collapse method; Emulsification activity; Lipase; Microplate assay; Tributyrin agar