Rhodococcus sensitive to benzene, resulting in an

Rhodococcus sp. 33, a marine bacteriumof genus Rhodococci, was isolated from Port Botany (Sidney), in a contaminatedsite near a chemical plant (ref num 1 lavoro Rhodococcus activity). Thisbacterium is able to tolerate and degrade highs levels of benzene.

Aizawa etal., reported a different benzene-tolerance for rough and mucoid Rhodococcus sp. 33 cells. Theydemonstrated that the spontaneous mutants rough-type, producing very low amountof EPS, were more sensitive to benzene, resulting in an absent or reducedgrowth in the presence of the pollutant. Otherwise, wild-type colonies thatproduced EPS appeared mucoid and they were resistant to benzene. These datasuggested the direct involvement of extracellular polysaccharide in theprotection against this pollutant (Aizawa, T.; Neilan, A. B.

; Couperwhite, I.; Urai, M.; Anzai, H.; Iwabuchi, N.; Nakajima, M.; Sunairi, M. Actinomycetologica 2005, 19, 1–6.).

EPSpurified through an enzymatic digestion and gel filtration chromatography, wasanalyzed by chemical and spectroscopic experiments. The polymer consists in atetrasaccaridic repeating unit containing Glc, Gal, GlcA, and Man substitutedby a pyruvic acid. Authors demonstrated that pyruvic residue and carboxyl groupwere responsible of the protecting activity, since the de-pyruvylated andcarboxyl-reduced EPS tested for the benzene sensitivity, showed no activity(Structural analysis of an extracellular polysaccharide produced by a benzenetolerant bacterium, Rhodococcus sp. 33.

Carbohydrate Research 341 (2006) 616–623, Makoto Urai, a Tomoko Aizawa, Hirosi Anzai, Jun Ogihara, Noriyuki Iwabuchi, Brett Neilan, Iain Couperwhite, dMutsuyasu Nakajima and Michio Sunairi). Rhodococcuserythropolis PR4 was isolated from Pacific Ocean, in Japan. Asreported for other strains (Ref 6-9 lavoro rhodococcus erythropolis), R. erythropolis produces a FACEPS, a fatty acids containing extracellularpolysaccharide. R.

erythropolis was grown on IB agar plates at 25°C; the EPSpurified through an ion exchange chromatography, showed two peaks FR1 and FR2displaying different monosaccharide composition and emulsifying activity. EPSFR1 contained Glc, GlcN, Man, and GlcA, did not show any emulsifying activity. Otherwise, EPS FR2, showed good activity probably related to the different chemicalstructure. Indeed, it displays a tetrasaccharidic repeating unit containingGal, Glc, Man, and GlcA, and an pyruvic acid substituting the mannose residue. Furthermore, only FR2 EPS contained stearic and palmitic acids. These dataallowed concluding that EPS FR2 was the FACEPS, named PR4, while FR1 wasassigned as mucoidan.