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Recovery of *Escherichia coli* IFO3301 Injured by Glycine and Ethanol

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The recovery of *Escherichia coli* IFO3301 injured by glycine (Gly) and/or ethanol (Et) was investigated. After treatment with 0.39 M Gly ($Gly_{0.39}$) and 3 M Et (Et_3), cells recovered in VSHINSKY broth (V-broth) but were unable to grow in glycerol. Further, the recovery was delayed in the presence of 0.75 M Gly and 1 M Et (Et_1). In Et_1-injured cells, ammonium lactate was required to restore respiratory activity. The organic ingredients of V-broth rescued the respiratory activity of the injured cells in the presence of puromycin, chloramphenicol and sodium azide. Treatment with Et at 3 M stopped the respiratory activity completely in V-broth. The β-Galactosidase (β-Gal) activity of the cells decreased slightly after treatment with 0.26 M Gly or Et_1. Not only 2 M Et (Et_2) combined with $Gly_{0.26}$ but also Et_2 alone inhibited the β-Gal activity strongly. This indicated that Et inhibited the β-Gal induction more than Gly. The results suggested that Et plays a role in the prevention of protein synthesis and respiratory electron transport to inhibit bacterial growth.

Keywords: *E. coli*, glycine, ethanol, respiratory activity, β-galactosidase activity

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