F323 Identification of the Genes Involved in Stationary-Phase Specific Acid Tolerance Response of *Salmonella typhimurium*

방 일수*, John W. Foster[1], 이 영록, 박 용근
고려대학교 이과대학 생물학과
[1]Dept. of Microbiology & Immunology, Univ. of South Alabama

Salmonella can experience and survive at severe acid stress during its natural or pathogenic life cycle. Entering to stationary growth phase, that organism is much more resistant to acid(1000-fold more than log-phase cell), and has specific acid tolerant system different from log-phase cells'(Foster et al., J. Bacteriol. 176:1422-1426). As part of on going investigation of stationary-phase specific acid resistance, we have searched for *spatr* mutations in virulent *S. typhimurium* UK-1 using the MudJ fusion technique and two lethal selection procedures including DNP(dinitrophenol) selection media and microtiter-plate selection method. Five acid sensitive mutations have been identified and designated *spatr* k1, *spatr* k2, *spatr* k3, *spatr* k4, *spatr* k5. These mutations removed both stationary-phase acid tolerant effect and stationary-phase specific acid resistance. Most of stationary-phase regulatory genes were tested for participating on stationary-phase acid tolerant response. Non-specific histone like protein, H-NS and stationary-phase specific sigma factor, RpoS showed little contribute to that system at respective single mutation(5-10 fold decrease). But, when both mutations were combined together, no acid resistance was achieved. Futhermore, the acid resistance of *hns* mutant decreased in direct proportion to the loss of RpoS activity.

F324

Cloning and Expression of Anaerobiosis- and pH-regulatory Genes, *oxrG* in *Salmonella typhimurium*.

김정철*, 방일수, 이영록, 박용근.
고려대학교 이과대학 생물학과

OxrG eliminates log-phase specific acid tolerance response and acts as a positive regulator for three anaerobiosis and low-pH inducible genes(*aniC, aniI and aciK*), and *oxrG* was mapped 88min in *Salmonella typhimurium* (Foster et al., Microbiology 140 (2):341-352 1994). The transcription of three operon fusions requires tyrosine as a coinducer. By using the library of *S. typhimurium* chromosomal DNA, we cloned *oxrG* in about 7.5kb. This recombinant plasmid, pFW53 complemented *oxrG*-Tn10 mutantion on minimal-tyrosine and rich medium. We amplified and extracted plasmid coded proteins by chloramphenicol inhibition method. And the periplasmic portion and cytoplasmic portion of extracted proteins were subjected to SDS-PAGE. Finally, specific band for *oxrG* was identified in the periplasmic portion, and was strongly induced by tyrosine and anaerobiosis. These results suggest that *oxrG* acts as a transducer of signals including anaerobiosis and tyrosine in *S. typhimurium*.