B308　　　　Comparison of bacterial densities and activities from uncontaminated
deep subsurface aquifer and aquifer contaminated livesotock wastewater

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Groundwater samples from 3 sites used for natural mineral water(NMWS) and a site contaminated with livestock wastewater(LWS) were investigated using several chemical and microbiological techniques. Groundwater samples in NMWS were collected using pumping system and those in LWS were collected from 6 boreholes using bailer. Bacterial densities and activities in LWS were higher, by heterotrophic plate count, direct count and bacterial secondary production, than in NMWS samples. Bacterial densities in NMWS ranged from 1.2 X 10^1 CFU ml^{-1} up to 3.7 X 10^3 CFU ml^{-1} for heterotrophic plate count. Bacterial densities in LWS ranged from 3.8 X 10^2 CFU ml^{-1} up to 2.7 X 10^6 cells ml^{-1} for heterotrophic plate count. It is impossible to estimate bacterial secondary production rate in some samples of NMWS because of the low bacterial densities. In LWS samples, bacterial secondary production rates were ranged from 3.8 X 10^4 cells l^{-1} hr^{-1} up to 1.7 X 10^7 cells l^{-1} hr^{-1}. In LWS samples, bacterial numbers and activities at deep confined aquifer were lower than at shallow unconfined aquifer. Therefore it is concluded that the bacterial densities and activities of subsurface aquifer are influenced mainly by depth and input from the surface.

B309　　　　　　PCR을 이용한 수계 병원성 세균의 검출

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　　하천수(한강)에 존재하는 병원성 세균의 분포를 조사하기 위해 PCR과 Membrane Filter method의 적용가능성을 연구하였다. 먼저 PCR을 위하여 EMBL database를 써서 *Salmonella typhi, Salmonella typhimurium, Staphylococcus aureus* 에 대한 specific primer를 설계하였다. *S.typhi, S.typhimurium*에 대해서는 병원성과 관계가 있다고 여겨지는 flagellin gene에 대해서 primer를 설계하였고, *Staphylococcus aureus*는 coagulase gene에 대하여 primer를 설계하였다. *Salmonella* spp.의 분포를 조사하기 위해서는 이미 알려진 primer를 사용하였다. 작성된 primer들을 standard strain에 대하여 적용해 본 결과 false positive나 false negative의 결과는 나타나지 않았다. 각 PCR product에 restriction enzyme을 처리해 본 결과 예상되는 size의 restriction product가 나타났다. Membrane Filter method를 적용하기 위해 Staphylococcus용 선택 배지로는 CHAPMAN agar, Mannitol salt phenol red agar, Staphylococcus medium 110, Baird-Parker media를 썼으며, Salmonella 용 선택배지로는 Desoxycholate citrate agar, Bismuth sulfite agar, XLD agar, Hektoen enteric agar, BPLS agar를 썼다. 여러 배지에 대해 standard strains에 대한 selectivity와 sensitivity를 조사하여 가장 적합한 배지를 선택하고, 이들에 대해 sodium azide, sodium chloride, novobiocin 등을 첨가하여 selectivity를 향상시켰다.