

영산강 유역에서의 고빈도 병원성 감염 여부

High Incidence of Campylobacter Contamination in the Yeong-San

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ABSTRACT

Intestinal pathogenic bacteria, Campylobacter, were detected in water samples collected from the Yeong-san river. 50 ml of water samples were filtered and incubated in enrichment broth. PCR using campylobacter genus specific primers showed positive results in all sites. We report the epidemical potential public health risk.

병원성 장내세균인 *Campylobacter* 를 영산강의 강물 샘플에서 발견하였으며, 이는 50ml의 물 샘플을 0.45 μ m pore size의 filter paper에서 여과한 뒤 이를 배양한 배양액을 대상으로 수행된 PCR 반응에서 양성을 보임으로서 판명되었음. 우리는 이 연구를 통해 하천을 통한 공중보건상의 감염 잠재성을 보고자 함.

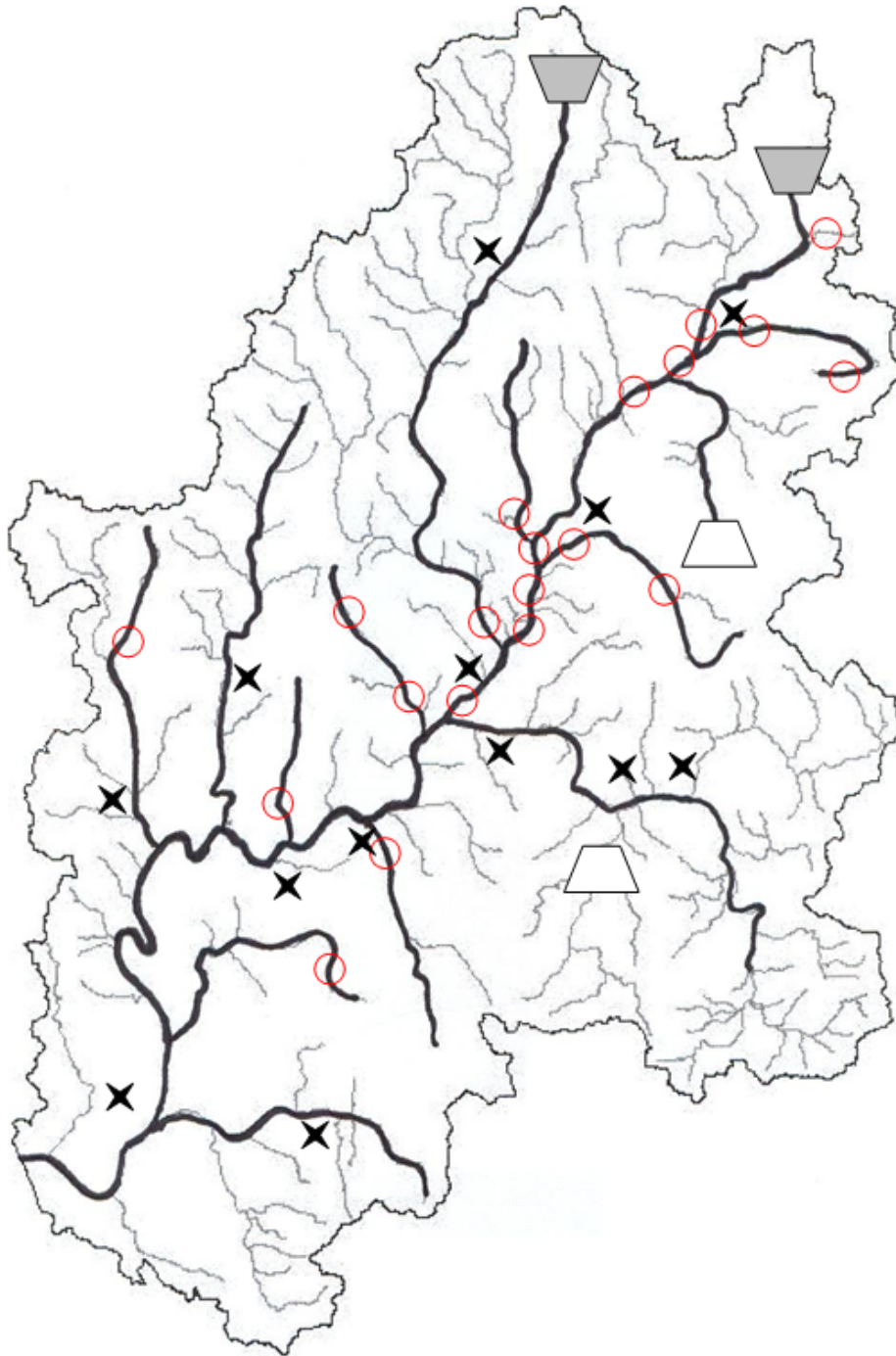
INTRODUCTION

Campylobacter enteritis, campylobacteriosis, is the most common cause of acute bacterial diarrhea worldwide; as much as 1% of the population is thought to be infected with Campylobacter species every year in North America (Centers for Disease Control and Prevention-U.S. Department of Agriculture-Food and Drug Administration Collaborating Sites Foodborne Disease Active Survey Network). Most cases of campylobacteriosis are associated with handling raw poultry or eating raw or undercooked poultry meat. A very small number of Campylobacter organisms (fewer than 500) can cause illness in humans. Larger outbreaks due to Campylobacter are usually related to drinking unpasteurized milk or contaminated water. Surface water and mountain streams can become contaminated from infected feces from cows or wild birds. More than 100,000 of migrating wild birds land in South Korea every year and those birds are the most likely to be the source of faecal contamination causing campylobacteriosis. In this study, we report high incidence of campylobacter contamination in Yeong-san River.

METHODS

Water Sample Collection

20 sites were selected along Yeong-San River. Those 20 sites have shown very high CFU/100ml for *E. coli* and Enterococci for long time (data not shown). Samples were kept in ice box and processed within 24 hours.



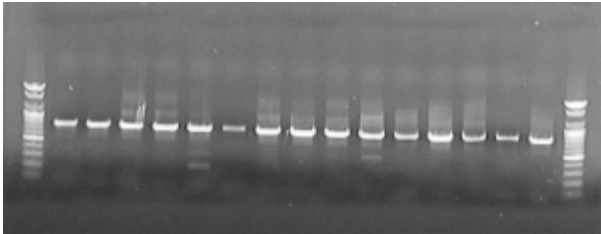
PCR

50ml of the water sample was filtered using 0.45-pore sized membrane and the filter membrane was directly incubated in Bolton broth for 2 days at 37°C. Cells were harvested by centrifuge and genomic DNA was extracted by boiling the harvested cells in 0.05M NaOH for 10 min. Cell debris was spinned down and the supernatant was 10 times diluted in autoclaved distilled water and used as a PCR template.

PCR condition and primers were described by Ishii et. al (Ishii et. al, 2006, AEM).

RESULTS

A picture below is an electrophoresis gel. Using campylobacter genus specific primers, the expected PCR product is 814 bp and the campylobacter positive results were seen in all 20 samples.



SUMMARY

Human pathogenic bacteria, campylobacter, were detected in 20 sites along Yeong-San River where high number of *E. coli* and Enterococci were often detected. The cause of this high incidence of campylobacter contamination in Yeong-San river could be due to migrating birds. A quantitative analysis has not been made yet. We will continue to monitor the Yeong-San River and detect the contamination level by quantifying.

ACKNOWLEDGEMENTS

This subject is supported by Korea Ministry of Environment as "The Eco-technopia 21 project".

REFERENCES

1. Satoshi Ishii et. al, "Cladophora (Chlorophyta) spp. Harbor Human Bacterial Pathogens in Nearshore Water of Lake Michigan, 2006, Applied and Environmental Microbiology, 4545-4553