

Title : Evaluation of effectiveness of urinary tract infection diagnosis using automated urine sedimentation equipment (Sysmex UF-5000)

Sub Title :

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### Introduction

Urinary tract infection is a common disease that can be treated in a short period of time by administering antibiotics. Recently it has reached a technology capable of distinguishing gram-positive cocci from gram-negative bacilli with automated urine sedimentation equipment but the verification of this technology is still insufficient.

### Materials and Methods

The samples were selected from hospitalized or outpatients at Soonchunhyang University Seoul Hospital. We compared bacteria flag in UF-5000 (Sysmex Corporation, Kobe, Japan) with microbiological laboratory test results, and Kappa value was calculated for statistical analysis.

### result

Of the 39 specimens marked as 'Gram Negative?' in the automated equipment, 35 cases were consistent with both Gram

staining and culture results. Of the 14 specimens indicated 'Gram Positive?' 9 cases were consistent with Gram staining and culture results. We analyzed Fleiss' Kappa value between UF-5000 with gram stain were 0.55 and UF-5000 with culture were 0.62.

### Review

Recently developed diagnostic test equipment is expected to be able to more quickly identify the causative bacteria of urinary tract infections. Therefore, in this study, the consistency of the result of comparing the urine sediment automation equipment and the actual cultured microorganisms was low, so it is considered to be limited for clinical use so far. However, since research and development are continuously being conducted, it is expected that these technologies will be used in clinical practice in the near future to contribute to the diagnosis and treatment of patients.

Key Words: Urinary tract infection, Sysmex UF-5000

Title : C4orf46 as a Novel Prognostic Biomarker in Hepatocellular Carcinoma using Bioinformatics Analysis

Sub Title : C4orf46 as a Novel Prognostic Biomarker in Hepatocellular Carcinoma

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### **Abstract**

Chromosome 4 is known to include genetic factors of various cancers, including hepatocellular carcinoma (HCC), and factors related biomarkers for diagnosis of diseases in the human body. However, chromosome 4 open-reading frame 46 (C4orf46), a member of the chromosome 4, have not yet been identified as biomarkers in HCC. In this study, the value of C4orf46 as a prognostic biomarker in HCC was evaluated, and the correlation with immune cells and molecular function were confirmed. It was analyzed using databases such as Kaplan-Meier plotter, the university of alabama at birmingham cancer data analysis portal (UALCAN), gene expression profiling interactive analysis version 2 (GEPIA2), TIMER and LinkedOmics. The mRNA level of C4orf46 was expressed higher in HCC compared to normal tissue. It was confirmed that high C4orf46 expression was related to poor prognosis according to results of survival rate such as DSS (Disease specific survival), OS (Overall survival), PFS (progression free survival), RFS (Relapse free survival). In

addition, the correlation between C4orf46 and infiltrating immune cells (CD4+T cell, CD8+ T cell, B cells, neutrophil, macrophage, and myeloid dendritic cells) is positively associated in HCC. We identified the biological process categories and showed that C4orf46 mainly participated in chromosome segregation, DNA replication, cell cycle G2/M phase transition, microtubule cytoskeleton organization involved in mitosis, mitotic cell cycle phase transition, etc. Moreover, we identified the molecular function categories and showed that C4orf46 mainly participated in single-stranded DNA binding, catalytic activity, acting on DNA, histone binding, damaged DNA binding, DNA secondary structure binding, helicase activity, etc. These results suggest that C4orf46 is a potential as a novel prognostic biomarker in HCC, we propose that further study of the detailed mechanism of C4orf46 in HCC.

Key Words: Hepatocellular carcinoma, C4orf46, Prognostic biomarker, Immune cells