

# 주요 우울증에서 Interleukin-10 유전자의 제한효소 절편길이 다형성

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## Restriction Fragment Length Polymorphism of Interleukin-10 Gene in Major Depression

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### ABSTRACT

**Objective :** Major depression is known to have immunologic dysfunctions, the recent studies revealed that cytokines including IL - 6 and IL - 1 were increased in patients with major depression. Since molecular genetic methods have been progressed, this study was to investigate the relationship between major depression and immunologic aspects by analyzing polymorphism of IL - 10 gene.

**Method :** 92 patients with major depression were included and data of 146 normal controls obtained from the Catholic Hemopoietic Stem Cell Information Bank of Korea were used in this study. DNA was extracted from whole blood, thereafter amplified by polymerase chain reaction, and digested by Mae After that procedure, we obtained and assessed RFLP of two alleles, IL - 10T and IL - 10C. All data were analyzed by  $\chi^2$  test.

**Results :**

1) There were no significant difference in genotype frequencies of IL - 10<sup>T</sup>T/T, IL - 10<sup>T</sup>T/C, and IL - 10<sup>C</sup>C/C between major depression patients group and control group.

2) There were no significant difference in allelic frequencies of IL - 10<sup>T</sup>T and IL - 10<sup>C</sup>C between major depression patients group and control group.

**Conclusion :** We did not verified the differences in frequencies of IL - 10<sup>T</sup>T/IL - 10<sup>C</sup>C gene between the major depression patients group and control group, respectively. But the results of this study do not declare that the IL - 10 gene has no association with major depression. We do suggest that further systematic studies including various clinical variables should be conducted.

**KEY WORDS :** IL - 10 gene · Polymorphism · Major depression.

### 서 론

(ischemia),

(neoplasia), (necrosis), (infection),  
(inflammation)

가

(inflammatory medi-

ator)

\*가

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(Licino Wong 1999).

Smith(1991) (macrophage theory)

Interleukin(IL) - 1 , IL - 6, Tu -

mor Necrosis Factor(TNF), Interferon(IFN)  
 가 가 . 가  
 (Joyce 1992 ; Maes 1993)  
 가 IL - 6, IL - 2 , IL - 1

92

IFN -

146

noradrenalin, serotonin 가  
 , Maes(1991)  
 dexamethasone IL -

2. IL-10 유전자 형별분석

1) DNA 추출

1 soluble IL - 2 IL Dickinson Vacutainer Systems, USA) 10ml  
 glucocorticoid . Ficoll - Paque(Pharmacia,  
 IL - 10 proinflammatory Sweden) 1 × 10<sup>6</sup> /ml 가  
 , IL - 1 , IL - 1 , 0.5ml

(Becton  
 pellet . pellet  
 (Proteinase K 0.07mg/ml, Nonidet P 40

TNF - , IL - 6, IL - 8, IL - 12, IFN -  
 (Novina Roy 1996 ; Mosmann  
 1994). Bluthe (1999) IL - 10  
 (social activity)

4.5 μl/ml, Tween - 20 4.5 μl/ml pH 8.0 100mM  
 Tris - HCl, 500mM KCl, 17mM MgCl<sub>2</sub> ) 0.5ml  
 가 50 60 DNA 95

Lipopolysaccharide  
 IL - 10 proinflammatory

10 (Proteinase K)  
 (polymerase chain reaction, PCR)  
 (template) DNA

, IL - 10  
 Seidel (1995)  
 IL - 10 가  
 가 . ,

2) PCR-MaeIII restriction fragment length polymorphism  
 Mae  
 (primer)

가 . ,  
 17 serotonin trans -  
 porter (Ogilvie 1996)  
 (Kunugi 1996)  
 dopamine transporter, D2, D3, D4  
 (Manki 1996) norepinephrine transporter(Owen  
 1999), CLOCK (Desan 2000)

IL - 101A : 5 ' - TAA - ATA - TCC - TCA - AAG - TTC -  
 C - 3 '  
 IL - 101B : 5 ' - ATC - CAA - GAC - AAC - ACT - ACT -  
 AA - 3 '

DNA 2 μl 10 × PCR buffer(100mM Tris -  
 HCl pH 8.3, KCl 500mM, MgCl<sub>2</sub> 15mM), 2mM dNTP, left,  
 right primer 20ng, Taq DNA polymerase 0.2 μl(5U/μl),  
 10 μl D/W가 가 18 μl 가 20 μl  
 Thermal Cycler(GeneAmp PCR  
 System 9600, Perkin Elmer, USA) 95 5  
 soaking , 95 30 denaturation, 56 30  
 annealing, 72 40 extension 35  
 , 72 10 extension

IL - 10

연구대상 및 방법

1. 연구대상

1995 7 1998 12 가  
 DSM - (American  
 Psychiatric Association 1994)

DNA(PCR product ; 588bp) 4 μl  
 Mae (Roche Diagnostics GmbH, Germany)  
 1.5U 55 3 ethidium bromide가  
 1.5% agarose gels DNA  
 Mae 509bp 79bp 2

(IL - 10<sup>\*</sup>T/T homozygote ; 1  
509bp ) 292bp, 217bp 79bp 3  
(IL - 10<sup>\*</sup>C/C homozygote ; 1  
292bp 217bp ) 509bp, 292bp, 217bp  
79bp 4 (IL - 10<sup>\*</sup>T/C hetero-  
zygote ; 1 509bp, 292bp 217bp 3 )  
3가 . 79bp  
가 가  
( 1).

### 3. 통계 분석

SAS/PC version 6.0

가 가 <sup>2</sup> test  
p<0.05

### 결 과

- 1) IL - 10 IL -  
10<sup>\*</sup>T/T, IL - 10<sup>\*</sup>T/C IL - 10<sup>\*</sup>C/C  
가 ( 41.3% 48.6%, 48.9% 42.5%, 9.8%  
8.9%)( 1).
- 2) IL - 10<sup>\*</sup>T IL - 10<sup>\*</sup>C  
가 ( 65.8% 69.9%, 34.2% 30.1%)  
( 2).

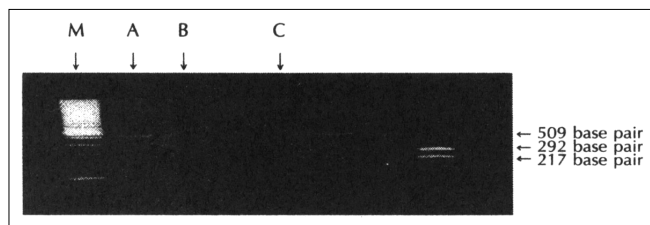


Fig. 1. The restricted fragments of amplified DNA by Mae I, A : IL - 10<sup>\*</sup>T/T, B : IL - 10<sup>\*</sup>T/C, C : IL - 10<sup>\*</sup>C/C, M : Marker.

Table 1. Distribution of genotype frequencies between major depression patients group and control group

	IL	10 <sup>*</sup> T/T	IL
Major depression (n = 92)	38 (41.3%)	45 (48.9%)	9 (9.8%)
Control (n = 146)	71 (48.6%)	62 (42.5%)	13 (8.9%)

Chi-square test : p>0.05

Table 2. Distribution of allelic frequencies between major depression patients group and control group

	IL	10 <sup>*</sup> T
Major depression (n = 184)	121 (65.8%)	63 (34.2%)
Control (n = 292)	204 (69.9%)	88 (30.1%)

Chi-square test : p>0.05

### 고 찰

IL - 10 17 21kDa  
1 encoding  
B (Hurme  
1998). IL - 10 position -4000 -1100 2가  
(microsatellites polymorphism)  
가 5' flanking region (transcription level)

IL - 10 (promoter) 5' flanking region  
IL - 10 가  
(Malefyt 1991 ; Bieche 1995).

IL - 10 Turner (1997) position -1082  
G/A, -819 C/T, -592 C/A  
(dinucleotide repeats)  
(base exchange)

(D'Alfonso 2000)  
, Crawley (1999) IL - 10 hap -  
lotype genotype

(Donaldson 2000), (Maurer 2000),  
(Inflammatory Bowel Disease)(Parkes  
1998), (Hajeer 1998)

IL - 10  
IL - 10 IL -  
10  
Seidel (1995)  
가  
IL - 10 가  
가

IL - 10 IL - 10<sup>\*</sup>T/T, IL - 10<sup>\*</sup>T/C IL - 10<sup>\*</sup>C/C  
IL - 10<sup>\*</sup>T IL - 10<sup>\*</sup>C  
가 . ,

가  
genetic mapping  
(singlegene disorder)  
(genetically heterogeneous)  
interval mapping DNA  
(Lander Botstein 1986).

(Neiswanger 1987 ; Faraone 1998 ; Marazita 1997 ; Gasperini 1990)  
가  
가  
, McGuffin (1988)  
(susceptibility) coinheritance  
가 , Owen (2000)  
(comorbidity)  
가  
가  
(prohibitively)  
large) Risch Merikangas(1996)  
genome - wide association 가  
(single nucleotide polymorphism)  
DNA chip 가 (very dense)  
(Wang 1998).  
가  
(heritability)  
가 (Owen 2000).  
(neuroticism homologue)  
(Flint 1997 ; Flint 1995)  
(causative gene)  
(modify -  
ing gene) (Owen  
2000).

중심 단어 : IL - 10

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