

*APPLICATIONS OF DSO™ MULTIPLEX PCR TECHNOLOGY*

# DIAGNOSTIC PRODUCTS

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# I. SEEPLEX™ STD DETECTION KIT

*STD: Sexually Transmitted Disease*

- Characteristics of the STD Detection Kit**

- Detection of Multiple Pathogens

**Can detect 6 types / 4 types of STD pathogens in just one test**

STD 6 Detection Kit	STD 4 Detection Kit
Trichomonas vaginalis	Treponema pallidum
Mycoplasma hominis	Haemophilus ducreyi
Ureaplasma urealyticum	HSV 1 & 2
Chlamydia trachomatis	Candida albicans
Mycoplasma genitalium	
Neisseria gonorrhoeae	

- Extreme Specificity and Reproducibility

The innovative DSO™ technology is employed to provide accurate results by addressing the problems of false products associated with the conventional PCR method.

- Convenient Data Analysis

- 1) Internal Control

**Internal control is used to check for problems that may arise during the viral RNA prep. or PCR process.**

**It helps one determine whether the PCR was conducted correctly and whether the appropriate amount of template was added.**

- 2) Contamination Prevention System

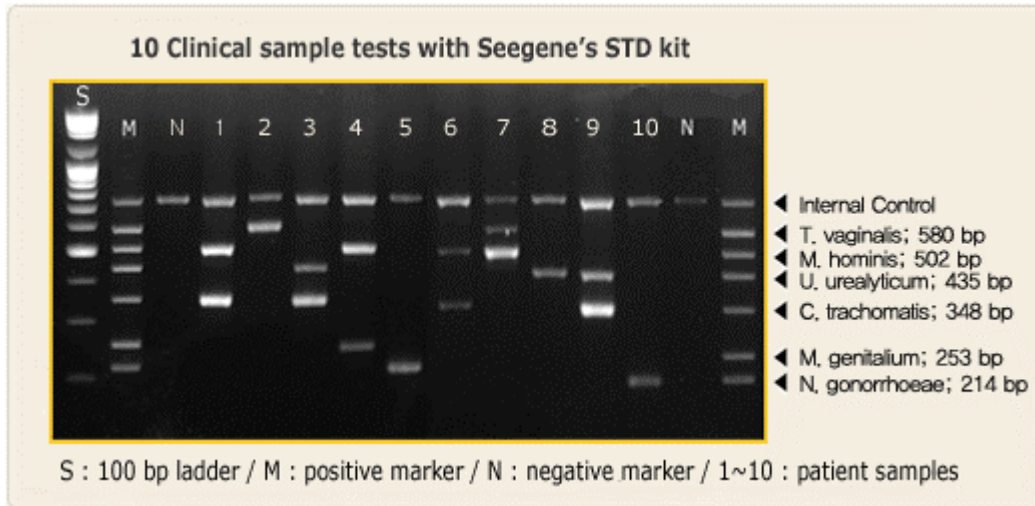
**The 8-methoxypsoralen (8-MOP) included to prevent the PCR products from acting as templates.**

- 3) Amplicon size marker

**Used in order to determine the size of the amplicons on the gel.**

• **Example of Clinical Sample Analysis**

Results from the analysis of 10 clinical samples using the STD 6 Detection Kit



Patient	Infectious Agents	Patient	Infectious Agents
1	M. hominis, C. trachomatis	6	M. hominis, C. trachomatis
2	T. vaginalis	7	T. vaginalis, M. hominis
3	U. urealyticum, C. trachomatis	8	U. urealyticum
4	M. hominis, M. genitalium	9	U. urealyticum, C. trachomatis
5	N. gonorrhoeae	10	N. gonorrhoeae

Above results are obtained from 10 STD clinical samples (DNA was extracted from the samples, analysed through a multiplex PCR and checked on a 2% agarose gel). Multiple, not just single, infections of each patient can be analysed on the gel.

• **Ordering Information**

Cat. No.	Product	Size
SD2100	STD 6 Detection Kit	100 tests
SD2200	STD 4 Detection Kit	100 tests

## II. SEEPLEX™ RV DETECTION KIT

*RV: Respiratory Virus*

- Characteristics of the RV Detection Kit**

1. Easy sampling

Not only nasal discharge and expectorate but a sample from a saline solution gargle is o.k.

2. Detection of Multiple Pathogens

6 types/12 types of respiratory viruses can be detected simply and accurately through one multiplex PCR.

3. Extreme Specificity and Reproducibility

The innovative DSO™ technology is employed to provide accurate results by addressing the problems of false products associated with the conventional PCR method.

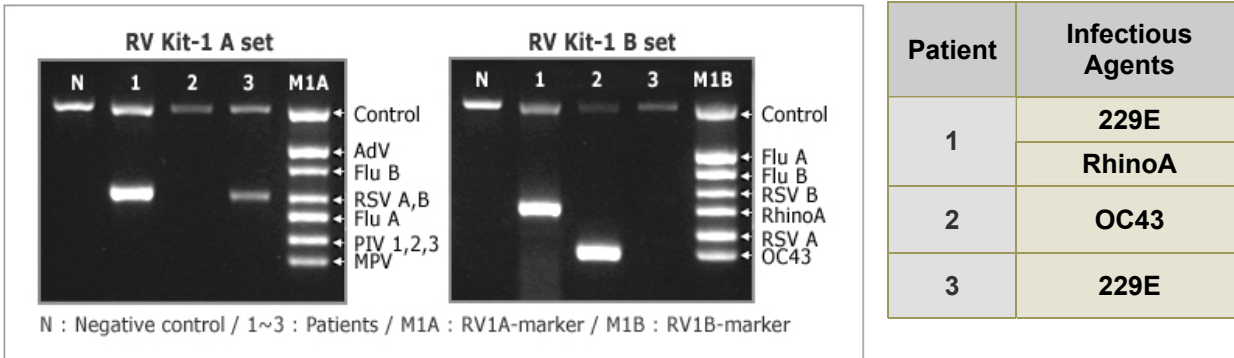
4. Convenient data analysis

Internal control, contamination prevention system, amplicon size marker and positive control DNA are included to improve the experimental performance.

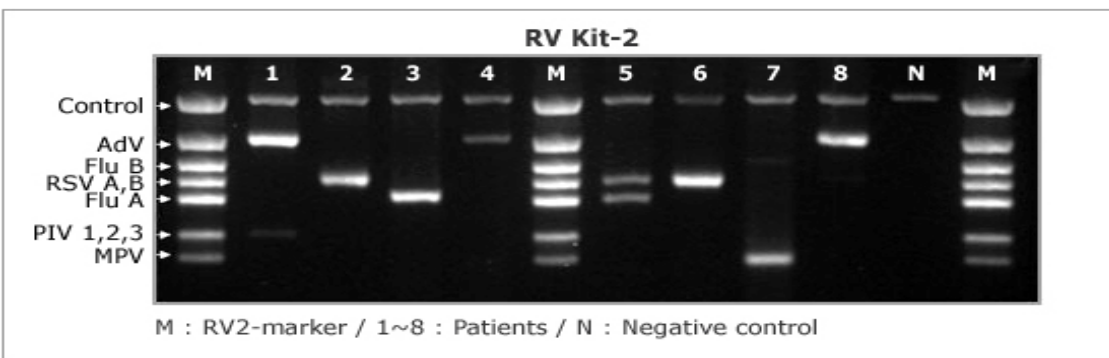
RV Detection Kit 1 12 Viruses		RV Detection Kit 2 6 Viruses
Adeno virus	Influenza A virus	Adeno virus
Metapneumo virus	Influenza B virus	Influenza A virus
Coronavirus 229E / NL63	Respiratory syncytial virus B	Influenza B virus
Parainfluenza virus 1	Rhino A virus	Respiratory syncytial virus A/B
Parainfluenza virus 2	Respiratory syncytial virus A	Metapneumo virus
Parainfluenza virus 3	Coronavirus OC43	Parainfluenza virus 1/2/3

• **Example of Clinical Sample Analysis**

1. Results from 3 clinical samples using RV Detection Kit-1



2. Results from 8 clinical samples using RV Detection Kit-2



Patient	Infectious Agents	Patient	Infectious Agents
1	AdV	5	RSV, Flu A
2	RSV	6	RSV
3	Flu A	7	MPV
4	AdV	8	AdV

Results were obtained from clinical samples (DNA was extracted from the samples, analysed through a multiplex PCR and checked on a 2% agarose gel). Multiple infections can be analysed conveniently and accurately with no false products.

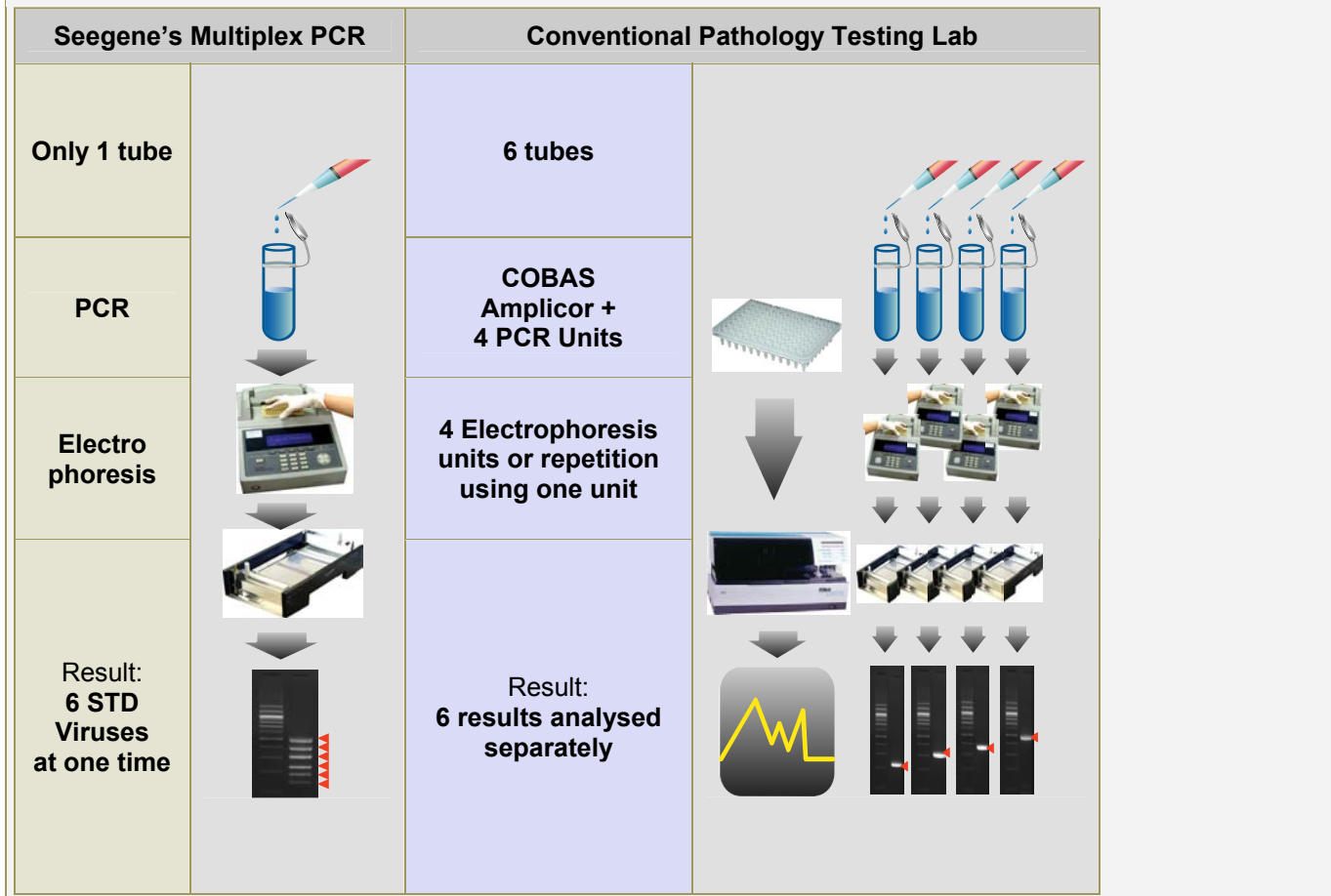
• **Ordering Information**

Cat.No.	Product	Size
RV1211	Respiratory Virus Detection Kit-1 (RV Kit-1 / v 2.0)	50 tests
RV2210	Respiratory Virus Detection Kit-2 (RV Kit-2 / v 2.0)	50 tests

Comparison of Effectiveness Between

III. SEEGENE'S DSO™ MULTIPLEX PCR & CONVENTIONAL TEST METHODS

	6 STD Viruses Analysed through Seegene's Multiplex PCR	6 STD Viruses Analysed at a conventional Pathology Testing Lab COBAS (2 types) from R company + Single PCR (4 types)
<b>Labour</b>	Requires low level PCR skill	Requires medium to high level PCR skill
<b>RV2210</b>	PCR (96well): 1 Unit	1 COBAS Analyser from R company + PCR(96well): 4 Units
<b>Time</b>	1 person can process in 1 day	1 person cannot process in 1 day
<b>Test</b>	Low difficulty of work Reduction in contamination Work capacity increased.	High difficulty of work Rise in contamination possible Work capacity decreased
<b>Required reagents</b>	Template, D.W, pre-mixutre	Template, D.W, Primer, Taq., dNTP

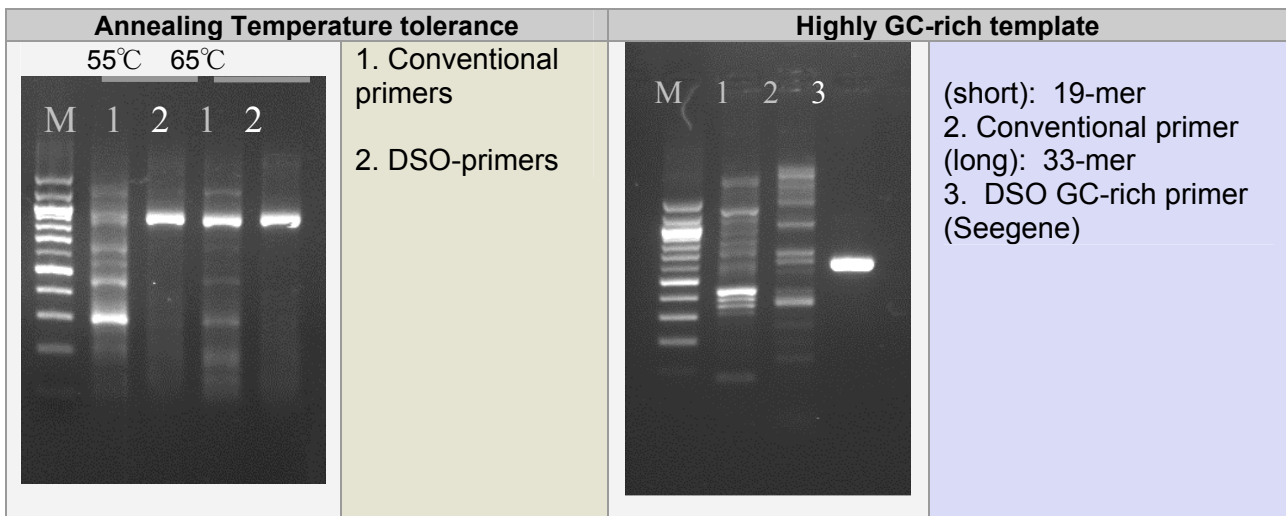


<b>Conclusions</b>	<ol style="list-style-type: none"><li>1. Minimal expenses from additional labour and equipment required by increase in test amount</li><li>2. Decrease in external factors that affect results =&gt; Increase in reliability of test results</li><li>3. Save on set up expenses and time</li><li>4. Prevents changes in test conditions</li><li>5. Economize by saving on reagents and supplies</li><li>6. Maximize returns from usage amount</li></ol>
<b>Summary of comparison</b>	<p>Seegene's DSO™ Multiplex Kit, in comparisons with COBAS Amplicor (R Company) + Single PCR tests at conventional testing labs, shows an average reduction of 45% in test material costs and a 3.5 times increase in efficiency.</p> <p><b>Additionally, the product has high competitiveness in the diagnosis market due to the superior accuracy allowed by DSO™ technology.</b></p>

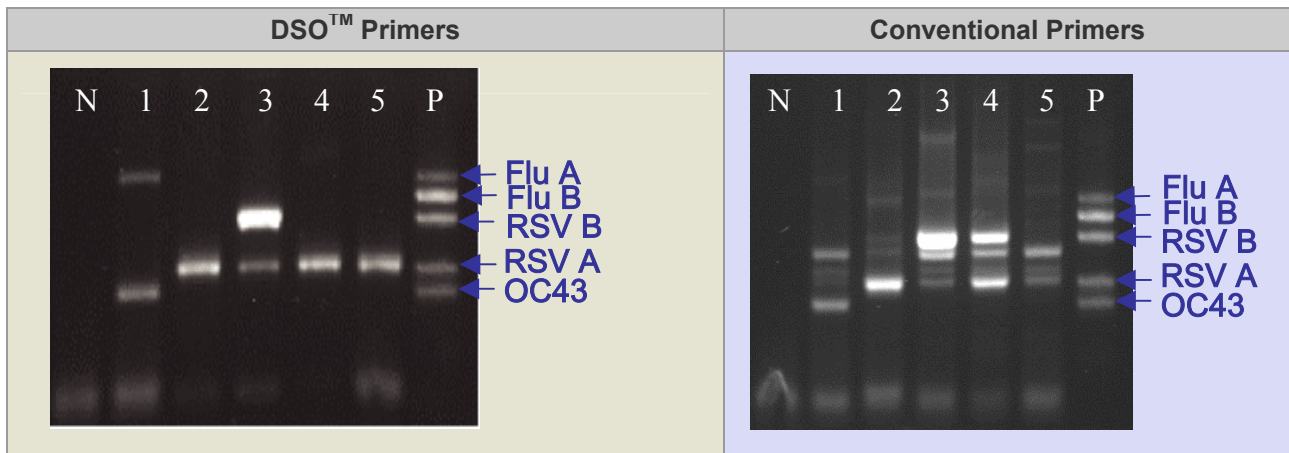
## IV. DSO™ (DUAL SPECIFICITY OLIGONUCLEOTIDE) TECHNOLOGY

- What is DSO™ Technology?

- 1) DSO™ technology provides dramatically improved PCR specificity and sensitivity that works even under extreme PCR conditions, such as high annealing temperatures, high GC content templates, and multiplex PCR.



- 2) Applications in various fields (example data from RV detection kit)



DSO™ multiplex PCR enhances accuracy to a great deal, compared to the conventional primers. The accuracy of the DSO™ technology has been demonstrated in the superior results from not only specific gene amplification but also in gene analysis/diagnosis, SNP research, and Multiplex PCR/RT-PCR, making it the driving force behind future Seegene diagnostic products.