

**510(k) SUBSTANTIAL EQUIVALENCE DETERMINATION  
DECISION SUMMARY  
ASSAY ONLY TEMPLATE**

**A. 510(k) Number:**

k081063

**B. Purpose for Submission:**

Addition of Voriconazole to the Sensititre® YeastOne® Susceptibility System

**C. Measurand:**

Voriconazole 0.008 – 16 µg/mL

**D. Type of Test:**

Quantitative Antimicrobial Susceptibility Test (AST) growth based

**E. Applicant:**

TREK Diagnostic Systems, Inc.

**F. Proprietary and Established Names:**

Sensititre® YeastOne® Susceptibility plates

**G. Regulatory Information:**

1. Regulation section:

866.1640 Antimicrobial Susceptibility Test Powder

2. Classification:

Class II

3. Product code:

NGZ Susceptibility Testing - antifungal

4. Panel:

83 Microbiology

## **H. Intended Use:**

### **1. Intended use(s):**

Sensititre® YeastOne® Susceptibility plates are designed for *in vitro* use in determining quantitative antifungal susceptibilities (MIC) of *Candida* species.

### **2. Indication(s) for use:**

This 510k application is intended for the addition of Voriconazole in the dilution range of 0.008 – 16 µg/mL on the Sensititre® YeastOne® Susceptibility plates for testing *C. albicans*, *C. krusei*, *C. parapsilosis*, and *C. tropicalis*.

### **3. Special conditions for use statement(s):**

Prescription use only

An alternative procedure should be performed if voriconazole with *C. glabrata* is identified.

The ability of the Sensititre® YeastOne® to detect resistance to Voriconazole is unknown because resistant strains were not available at the time of comparative testing.

### **4. Special instrument requirements:**

Manual Readings only

## **I. Device Description:**

The Sensititre® YeastOne® Susceptibility system is a micro-version of the broth dilution susceptibility test. Various antifungal agents are serially diluted to concentrations bridging the range of the clinical interest in autoclaved diluent, which contains a colorimetric growth indicating compound. Each microdilution plate is individually packaged in foil. After inoculation, plates are sealed with an adhesive seal, incubated at 35°C for 24 hours and examined for growth.

## **J. Substantial Equivalence Information:**

### **1. Predicate device name(s):**

VITEK® AST-YS Fluconazole

### **2. Predicate 510(k) number(s):**

k061945

3. Comparison with predicate:

Similarities		
Item	Device	Predicate
Intended Use	Susceptibility testing for colonies of <i>Candida</i>	Susceptibility testing for colonies of <i>Candida</i>
Incubation	35°C	Same

Differences		
Item	Device	Predicate
Technology	Broth micro dilution – growth based with growth colorimetric indicator for manual readings	Automated growth based Broth micro dilution -detection using growth based with attenuation of light colorimetric growth measured by optical indicator for manual scanner.
Format	Micro tray with dried antifungals Medium	VITEK® 2 AST test card with dried antifungals
Medium	Sensititre® yeast susceptibility inoculum broth	VITEK® 2 Yeast Base broth
Antifungal	voriconazole	fluconazole
Time to Results	24 hours	10 to 36 hours

**K. Standard/Guidance Document Referenced (if applicable):**

“Class II Special Controls Guidance Document: Antimicrobial Susceptibility Test Systems; Guidance for Industry and FDA”; CLSI M27 S3 “Reference Method for Broth Dilution Antifungal Susceptibility Testing of Yeasts; Approved Standard - Third Edition.”

**L. Test Principle:**

The Sensititre® YeastOne® panel measures growth by colorimetric determination of REDOX state produced by the test organism rather than measuring the turbidity of the test medium. In the Sensititre panel as in most broth dilution tests the difference between wells in which growth occurs and those in which growth is inhibited is distinctive. However, the Sensititre panel produces an easily distinguished color change when light growth occurs – a circumstance which is often difficult to interpret correctly using turbidity readings.

**M. Performance Characteristics (if/when applicable):**

1. Analytical performance:

a. *Precision/Reproducibility:*

Reproducibility was conducted at three sites on ten yeast isolates with testing performed over three days in triplicate. The testing was performed using both

manual and automated inoculation methods. The reproducibility was >95% with  $\pm 1$  one dilution observations.

*b. Linearity/assay reportable range:*

Not Applicable

*c. Traceability, Stability, Expected values (controls, calibrators, or methods):*

Quality Control (QC) testing was performed on each day of clinical testing on the QC isolates, *C. parapsilosis* ATCC 22019, and *C. krusei* ATCC 6258, as recommended in the CLSI standard M27. The following table represents the frequency of the results in both the reference method and the Sensititre® YeastOne® Susceptibility plates and the acceptable range. Quality Control was also performed at three sites using both manual (electronic pipette) and autoinoculation methods.

Quality Control Table

<b>ORGANISM</b>	<b>Conc ug/mL</b>	<b>Automated Inoculation Method</b>			<b>Manual Inoculation Method</b>		
		<b>Sensititre® YeastOne®</b>	<b>Reference</b>		<b>Sensititre® YeastOne®</b>	<b>Reference</b>	
			<b>24h</b>	<b>48h</b>		<b>24h</b>	<b>48h</b>
<i>C. parapsilosis</i> ATCC 22019 Expected Range : 0.016 – 0.12 µg/mL	0.016					1	
	0.03	4	30	4	4	33	6
	0.06	47	31	55	27	9	22
	0.12	10		2	12		15
<i>C. krusei</i> ATCC 6258 Expected Range : 0.06 – 0.25 µg/mL	0.06	0	1			1	
	0.12	19	39	27	19	24	
	0.25	42	21	33	23	16	11
	0.5			1	1	2	32

Nephelometer was used at each site to standardize the inoculum. Colony counts from QC ATCC source were performed using direct inoculum method.

*d. Detection limit:*

Not Applicable

*e. Analytical specificity:*

Not Applicable

*f. Assay cut-off:*

Not Applicable

2. Comparison studies:

a. *Method comparison with predicate device:*

Performance was established on the Sensititre® YeastOne® Susceptibility System for *Candida spp.* at three clinical sites. The CLSI reference method as described in the CLSI document M27 "Method for Broth Dilution Antifungal Susceptibility Testing of Yeasts" was compared to the Sensititre® YeastOne® Susceptibility System. A total of 367 isolates of *Candida species* were tested on the Sensititre® YeastOne® using both manual and automated inoculation methods. The no growth rate is <10%.

EA was calculated when the results for the reference method and the Sensititre® YeastOne® were within +/- two doubling dilutions of the antifungal drug. The following tables present the performance of the Sensititre® YeastOne® Susceptibility System when read at 24 hours using both manual and automated inoculation methods as compared to the reference method when read at 48 hours.

Summary Table using the AUTOINOCULATOR (24hour vs 48hour)

	EA Tot	EA N	EA %	Eval EA Tot	Eval EA N	Eval EA %	CA N	CA %	#R	min	maj	vmj
<b>Clinical</b>	<b>174</b>	<b>171</b>	<b>98.3</b>	<b>130</b>	<b>127</b>	<b>97.7</b>	<b>171</b>	<b>98.2</b>	<b>6</b>	<b>3</b>	<b>0</b>	<b>0</b>
<b>Challenge</b>	<b>193</b>	<b>184</b>	<b>95.3</b>	<b>172</b>	<b>162</b>	<b>94.1</b>	<b>176</b>	<b>91.2</b>	<b>2</b>	<b>17</b>	<b>0</b>	<b>0</b>
<b>Combined</b>	<b>367</b>	<b>355</b>	<b>96.37</b>	<b>302</b>	<b>289</b>	<b>95.7</b>	<b>347</b>	<b>94.5</b>	<b>8</b>	<b>20</b>	<b>0</b>	<b>0</b>

\*There were 14 min errors with *C. glabrata* with the autoinoculation method with a min error rate of 20.2%. Because of the high number of errors, a limitation has been included in the technical insert to perform an alternate method for testing when this drug/bug combination is isolated.

Summary Table using MANUAL Dilution (24hour vs 48hour)

	EA Tot	EA N	EA %	Eval EA Tot	Eval EA N	Eval EA %	CA N	CA %	#R	min	maj	vmj
<b>Clinical</b>	<b>268</b>	<b>261</b>	<b>97.3</b>	<b>211</b>	<b>204</b>	<b>96.7</b>	<b>256</b>	<b>95.5</b>	<b>9</b>	<b>12</b>	<b>0</b>	<b>0</b>
<b>Challenge</b>	<b>101</b>	<b>98</b>	<b>97.0</b>	<b>85</b>	<b>82</b>	<b>96.4</b>	<b>92</b>	<b>91.1</b>	<b>2</b>	<b>9</b>	<b>0</b>	<b>0</b>
<b>Combined</b>	<b>369</b>	<b>359</b>	<b>97.2</b>	<b>296</b>	<b>286</b>	<b>96.6</b>	<b>348</b>	<b>94.3</b>	<b>11</b>	<b>21</b>	<b>0</b>	<b>0</b>

\*There were 10 min errors with *C. glabrata* with the manual method of inoculation with a min error rate of 19.6%. Because of the high number of errors, a limitation has been included in the technical insert to perform an alternate method for testing when this drug/bug combination is isolated.

**EA** - Essential Agreement

**CA** - Category Agreement

**R**-resistant isolates

**maj**-major discrepancies

**vmj**-very major discrepancies

**min**- minor discrepancies

Category agreement (CA) is when the Sensititre® panel result interpretation agrees exactly with the reference panel result interpretation. Evaluable EA is when the

MIC result is on scale for both the Sensititre® and the reference and have on-scale EA.

*b. Matrix comparison:*

Not Applicable

3. Clinical studies:

*a. Clinical Sensitivity:*

Not Applicable

*b. Clinical specificity:*

Not Applicable

*c. Other clinical supportive data (when a. and b. are not applicable):*

Not Applicable

4. Clinical cut-off:

Not Applicable

5. Expected values/Reference range:

*Candida* species <1 (S), 2 (I), ≥4 (R)

**N. Proposed Labeling:**

The expected value range, interpretive criteria and QC are included in the package insert. The labeling is sufficient and satisfies the requirements of 21 CFR Part 809.10.

**O. Conclusion:**

The submitted information in this premarket notification is complete and supports a substantial equivalence decision.