

JUN 04 2002

K020368

## **510(k) Summary of Safety and Effectiveness**

*This summary of 510(k) safety and effectiveness information is being submitted in accordance with the requirements of SMDA 1990 and 21 CFR 807.92.*

### **Introduction**

According to the requirements of 21 CFR 807.92, the following information provides sufficient detail to understand the basis for a determination of substantial equivalence.

### **Submitter name, Address, and Contact**

Lin-Zhi International, Inc.  
2391 Zanker Road, Suite 340  
San Jose, CA 95131-1124  
Phone: (408) 944-0360  
Fax: (408) 944-0359

Contact: Chiu Chin Chang, Ph.D.  
VP, R&D

### **Device Name and Classification**

Classification Name: Opiate test system, Class II, DJG (91 Toxicology),  
21CFR 862.3650  
Common Name: Homogeneous enzyme immunoassay for the determination  
of opiates levels in urine.  
Proprietary Name: None

### **Legally Marketed Predicate Device(s)**

Lin-Zhi International, Inc.' Opiate Enzyme Immunoassay is substantially equivalent to the DRI<sup>®</sup> DAU Opiate Assay (By Microgenics Corp.), cleared under premarket notification K011150.

LZI's Opiate Enzyme Immunoassay is identical or similar to its predicate in terms of intended use, method principle, device components, and clinical performance.

### **Device Description**

LZI's Opiate Enzyme Immunoassay is a ready-to-use, liquid reagent, homogeneous enzyme immunoassay. The assay uses specific antibody that can detect opiates in human urine with minimal cross-reactivity to various, common prescription drugs and abused drugs.

The assay is based on competition between morphine labeled with glucose-6-phosphate dehydrogenase (G6PDH) enzyme, and free drug from the urine sample for a fixed amount of specific antibody. In the absence of free drug from the urine sample the specific antibody binds to the drug labeled with G6PDH enzyme causing a decrease in enzyme activity. The G6PDH enzyme activity is determined spectrophotometrically at 340 nm by measuring its ability to covert nicotinamide adenine dinucleotide (NAD) to NADH.

### **Intended Use**

The Opiate Enzyme Immunoassay is a homogeneous enzyme immunoassay with a 300 ng/mL cutoff. The assay is intended for use in the qualitative and semi-quantitative analyses of opiates in human urine.

### **Comparison to Predicate Device**

LZI's Opiate Enzyme Immunoassay is substantially equivalent to other products in commercially distribution intended for similar use. Most notably it is substantially equivalent to the currently, commercially marketed DRI<sup>®</sup> Opiate Enzyme Immunoassay (K011150) by Microgenics Corporation.

The following table compares LZI's Opiate Enzyme Immunoassay with the predicate device, DRI<sup>®</sup> DAU Opiate Enzyme Immunoassay:

#### Similarities:

- Both assays are for qualitative and semi-quantitative determination of opiates in human urine.
- Both assays use the same method principle, and device components.
- Both assays use 300 ng/mL as cutoff level per recommendations of The Substance Abuse and Metal Health Services Administration (SAMHSA).

#### Differences:

DRI<sup>®</sup> Opiate Enzyme Immunoassay can also be used as a 2000 ng/mL cutoff assay when different size of sample is used. Current LZI assay is for use as an assay with 300 ng/mL cutoff only.

(Comparison to Predicate Device, continued)

**Performance Characteristics (Comparing the 300 ng/mL cutoff assay performance only)**

Feature	Microgenics' DRI <sup>®</sup> Opiate EIA				LZI's Opiate EIA			
<b>Within Run Precision:</b>								
Qualitative:	<u>Mean Rate</u>	<u>SD</u>	<u>% CV</u>		<u>Mean Rate</u>	<u>SD</u>	<u>% CV</u>	
Negative	-	-	-		Negative	291.6	2.19	0.75
225 ng/mL	374	2.2	0.6		225 ng/mL	374.4	3.01	0.80
300 ng/mL	401	2.3	0.6		300 ng/mL	399.8	3.42	0.86
375 ng/mL	421	2.4	0.6		375 ng/mL	421.8	3.20	0.76
1000 ng/mL	-	-	-		1000 ng/mL	530.8	5.17	0.97
Semi-quantitative:	<u>Mean Conc.</u>	<u>SD</u>	<u>% CV</u>		<u>Mean Conc.</u>	<u>SD</u>	<u>% CV</u>	
225 ng/mL	226	6.0	2.7		225 ng/mL	218.6	5.96	2.73
300 ng/mL	303	8.1	2.7		300 ng/mL	298.0	9.84	3.30
375 ng/mL	379	15.1	4.0		375 ng/mL	373.3	11.18	3.00
<b>Run-To-Run Precision:</b>	(total precision)							
Qualitative:	<u>Mean Rate</u>	<u>SD</u>	<u>% CV</u>		<u>Mean Rate</u>	<u>SD</u>	<u>% CV</u>	
Negative	-	-	-		Negative	292.8	1.81	0.62
225 ng/mL	374	2.6	0.7		225 ng/mL	375.8	3.61	0.96
300 ng/mL	401	3.2	0.8		300 ng/mL	400.8	3.34	0.83
375 ng/mL	421	3.0	0.7		375 ng/mL	421.1	2.87	0.68
1000 ng/mL	-	-	-		1000 ng/mL	528.6	4.84	0.92
Semi-quantitative:	<u>Mean Conc.</u>	<u>SD</u>	<u>% CV</u>		<u>Mean Conc.</u>	<u>SD</u>	<u>% CV</u>	
225 ng/mL	226	8.2	3.6		225 ng/mL	223.8	9.45	4.22
300 ng/mL	303	9.4	3.1		300 ng/mL	301.0	9.15	3.04
375 ng/mL	379	15.9	4.2		375 ng/mL	377.8	7.53	1.99
<b>Sensitivity:</b>	6 ng/mL				15 ng/mL			
<b>Accuracy:</b>	Vs. GC/MS				Vs. DRI <sup>®</sup> Opiate EIA (n = 216)			
Positive Samples:	100 % agreement				97.1 % agreement			
Negative Samples:	90 % agreement				93.8 % agreement			
<b>Analytical Recovery:</b>								
Qualitative:	No data available				100 % accuracy on positive vs. negative tests			
Semi-quantitative:	No data available				Quantitates within ±10% of the nominal concentration between 60ng/mL and 900 ng/mL.			
					Average 97.7 % recovery at 225 ng/mL level (Cutoff - 25%)			
					Average 96.7 % recovery at 375 ng/mL level (Cutoff + 25%)			
<b>Interference:</b>	See attached Microgenics' DRI <sup>®</sup> Opiate EIA package insert				Compounds tested are comparable to the predicate device. Results included in the specificity table.			
<b>Specificity:</b>	See attached Microgenics' DRI <sup>®</sup> Opiate EIA package insert				Comparable to the predicate device.			

## **Conclusion**

LZI's Opiate Enzyme Immunoassay was evaluated for several performance characteristics including precision, sensitivity, accuracy, analytical recovery, and specificity. All the studies showed acceptable results when compared to the predicate device.

We trust the information provided in this Premarket Notification [510(k)] submission will support a determination of substantial equivalence of the LZI's Opiate Enzyme Immunoassay to other opiate test systems currently marketed in the United States.



DEPARTMENT OF HEALTH & HUMAN SERVICES

Food and Drug Administration  
2098 Gaither Road  
Rockville MD 20850

JUN 04 2002

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Re: k020368  
Trade/Device Name: Opiate Enzyme Immunoassay  
Regulation Number: 21 CFR 862.3650  
Regulation Name: Opiate test system  
Regulatory Class: Class II  
Product Code: DJG  
Dated: April 24, 2002  
Received: April 26, 2002

Dear Dr. Chang:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration.

If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to such additional controls. Existing major regulations affecting your device can be found in the Code of Federal Regulations, Title 21, Parts 800 to 898. In addition, FDA may publish further announcements concerning your device in the Federal Register.

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Part 801); good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820); and if applicable, the electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR 1000-1050.

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This letter will allow you to begin marketing your device as described in your 510(k) premarket notification. The FDA finding of substantial equivalence of your device to a legally marketed predicate device results in a classification for your device and thus, permits your device to proceed to the market.

If you desire specific advice for your device on our labeling regulation (21 CFR Part 801 and additionally 809.10 for in vitro diagnostic devices), please contact the Office of Compliance at (301) 594-4588. Additionally, for questions on the promotion and advertising of your device, please contact the Office of Compliance at (301) 594-4639. Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21CFR 807.97). Other general information on your responsibilities under the Act may be obtained from the Division of Small Manufacturers International and Consumer Assistance at its toll-free number (800) 638-2041 or (301) 443-6597 or at its internet address "<http://www.fda.gov/cdrh/dsma/dsmamain.html>".

Sincerely yours,



Steven I. Gutman, M.D., M.B.A.  
Director  
Division of Clinical Laboratory-Devices  
Office of Device Evaluation  
Center for Devices and  
Radiological Health

Enclosure

# Premarket Notification

## Indications for Use Statement

510(k) Number (if known): K020368

Device Name: **Opiate Enzyme Immunoassay**

### Indications for Use:

The Opiate Enzyme Immunoassay is a homogeneous enzyme immunoassay with a 300 ng/mL cutoff. The assay is intended for use in the qualitative and semi-quantitative analyses of opiates in human urine.

The Opiate Enzyme Immunoassay provides only a preliminary analytical test result. A more specific alternative chemical method must be used to obtain a confirmed analytical result. Gas chromatography/mass spectrometry (GC/MS) is the preferred confirmatory method. Clinical consideration and professional judgement should be applied to any drug-of-abuse test result, particularly when preliminary positive results are used.

  
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(Division Sign-Off)  
Division of Clinical Laboratory Devices  
510(k) Number K020368

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Concurrence of CDRH, Office of Device Evaluation (ODE)

  
\_\_\_\_\_  
**Prescription Use**  
**(Per 21 CFR 801.109)**

OR

\_\_\_\_\_  
**Over-The-Counter Use**

(Optional Format 1-2-96)