

**CENTER FOR DRUG EVALUATION AND
RESEARCH**

APPLICATION NUMBER:

202158Orig1s000

NON-CLINICAL REVIEW(S)

**DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
FOOD AND DRUG ADMINISTRATION
CENTER FOR DRUG EVALUATION AND RESEARCH**

PHARMACOLOGY/TOXICOLOGY NDA/BLA REVIEW AND EVALUATION

Application number: 202158
Supporting document/s: eCTD
Applicant's letter date: January 4, 2013
CDER stamp date: January 4, 2013
Product: TechneGen™ Generator System for Preparation
of Sodium Pertechnetate Tc99m Injection,
(Sodium Pertechnetate Tc99m Injection USP),
Injection (b) (4)
Indication: Multiple Tissues/Organs Imaging
Applicant: NorthStar Medical Radioisotopes, LLC,
5249 Femrite Rd, Madison, WI 53718
Review Division: Medical Imaging Products
Reviewer: Siham Biade, Pharm.D., Ph.D.
Supervisor/Team Leader: Adebayo A Laniyonu, Ph.D.
Division Director: Libero Marzella, M.D., Ph.D. (Acting), M.D.
Project Manager: Alberta Davis-Warren, B.S.

Template Version: September 1, 2010

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1 Executive Summary

1.1 Introduction

This NDA has been submitted as a 505(b)(2) application.

Sodium Pertechnetate Tc99m is an FDA-approved product; however, the production of traditional alumina based commercial generators has been interrupted by shortages of Mo99 produced by nuclear fission of U-235. The sponsor has developed a new computer monitored and controlled automated synthesis module, the TechnGen Generator System, for separating and purifying Sodium Pertechnetate Tc99m Injection from its radioactive Mo99 parent isotope. This separation technology is also capable of concentrating the Tc99m to concentrations useful for the intended clinical use.

The Sponsor proposes the following indications:

Brain Imaging (including cerebral radionuclide angiography,

Thyroid Imaging

Salivary Gland Imaging

Blood Pool Imaging (including radionuclide angiography)

Urinary Bladder Imaging (direct isotopic cystography) for detection of vesico-ureteral reflux

Nasolacrimal Draining System Imaging

Sodium Pertechnetate Tc 99m Injection is also used to reconstitute a variety of reagent kits, commonly referred to as Technetium Tc 99m kits, with each reconstituted kit used for specified diagnostic imaging indication.

1.2 Brief Discussion of Nonclinical Findings

No nonclinical information was submitted.

Based on a communication with the CMC reviewer (Dr. Ravindra Kasliwal), the sponsor's data demonstrated compliance of the end product Sodium Pertechnetate Tc99m Injection with the US Pharmacopeia monograph requirements. This testing also provides clear evidence that (b) (4) which were detected as a periodic radionuclidic impurity in Potassium Molybdate Mo99 (as described in the drug substance section), did not carry over into the final product .

There are no nonclinical issues for this NDA.

1.3 Recommendations

1.3.1 Approvability

Sodium Pertechnetate Tc99m is an FDA-approved product.

1.3.2 Additional Non Clinical Recommendations

None

1.3.3 Labeling

Proposed labeling (Ultratechne-Kow0

Carcinogenesis, Mutagenesis, Impairment of Fertility:

No long-term animal studies have been performed to evaluate carcinogenic or mutagenic potential or whether Sodium Pertechnetate Tc 99m may affect fertility in males or females.

Pregnancy Category C:

Animal reproductive studies have not been conducted with Sodium Pertechnetate Tc99m. It is also not known whether Sodium Pertechnetate Tc 99m can cause fetal harm when administered to a pregnant woman or can affect reproductive capacity. Sodium Pertechnetate Tc 99m should be given to pregnant women only if the expected benefits to be gained clearly outweigh the potential hazards. Ideally, examinations using radiopharmaceutical drug products - especially those elective in nature - of women of childbearing capability should be performed during the first ten days following the onset of menses.

Nursing Mothers:

Technetium Tc 99m is excreted in human milk during lactation, therefore, formula feedings should be substituted for breast- feedings.

Reviewer's Comments

Labeling review is deferred pending resolution of other disciplines issues identified during this review cycle.

2 Relevant INDs, NDAs, BLAs and DMFs

Information obtained at Drugs@FDA

<i>NDA #</i>	<i>Drug Name</i>	<i>Strength Ci/Generator</i>	<i>Company</i>	<i>Marketing status</i>	<i>Approval date</i>
017243	ULTRA- TECHNEKOW FM	0.25-3	Mallinckrodt	Prescription	11/23/1973
017339	MINITEC	0.22-2.22	Bracco	Discontinued	06/3/1974
017771	TECHNELITE	0.0083-2.7	Lantheus Medical	Prescription	11/16/1976
017693	TECHNETIUM TC 99MGENERATOR	0.83-16.6	GE Healthcare	Discontinued	11/15/1976

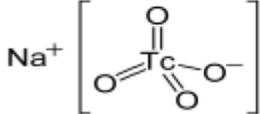
3 Drug Information

Generic Name: Technetium Tc 99m Generator

Chemical Name: Sodium pertechnetate Tc 99m

Molecular Formula/Molecular Weight: $^{99m}\text{Tc NaTcO}_4$ / 188

Description

Characteristic	Property
INN Name	Sodium Pertechnetate Tc99m
Compendial Name	Sodium Pertechnetate Tc99m Injection
IUPAC Name	Sodium technetate(VII)
Other chemical Names	sodium tetraoxotechnetate (VII)
CAS registry Number	13718-28-0
Molecular Formula	$\text{Na}^+ - ^{99m}\text{TcO}_4^-$
Molecular Structure	
Molecular Weight	185.89 g/mol
Composition	Na(12.37%) O(34.43%) Tc(53.21%)
Solubility	Freely soluble in water
Appearance of solution	Clear & colorless

Pharmacologic Class: Diagnostic Agent – Radiopharmaceutical

Overall Summary/Conclusion:

Sodium Pertechnetate Tc99m is an FDA-approved product; however, the production of traditional alumina based commercial generators has been interrupted by shortages of Mo99 produced by nuclear fission of U-235. The sponsor has developed a new computer monitored and controlled automated synthesis module, the TechneGen Generator System, for separating and purifying Sodium Pertechnetate Tc99m Injection from its radioactive Mo99 parent isotope.

There were no nonclinical issues for this NDA. Labeling review is deferred pending resolution of other disciplines issues identified during this review cycle.

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/s/

ADEBAYO A LANIYONU

09/16/2013

Dr. Biade wrote a draft review prior to her [REDACTED] (b) (6). I concurred with her review.