Nelfinavir Mesylate

sc-208089

Material Safety Data Sheet

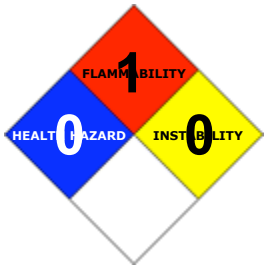
Hazard Alert Code Key:	EXTREME	HIGH	MODERATE	LOW

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
Nelfinavir Mesylate

STATEMENT OF HAZARDOUS NATURE
CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.

NFPA



SUPPLIER
Santa Cruz Biotechnology, Inc.
2145 Delaware Avenue
Santa Cruz, California 95060
800.457.3801 or 831.457.3800
EMERGENCY:
ChemWatch
Within the US & Canada: 877-715-9305
Outside the US & Canada: +800 2436 2255
(1-800-CHEMCALL) or call +613 9573 3112

SYNONYMS
C32-H45-N3-O4-S.C-H4-O3-S, "3-isoquinolinecarboxamide, N-(1, 1-dimethylethyl)decahydro-2-[2-hydroxy-", "3-((3-hydroxy-2-methylbenzoyl)amino)-4-(phenylthio)butyl]-, (3S-(2(2, ", "S*, 3S*), 3alpha-4abeta, 8abeta))-, monomethanesulfonate", AG-1343, Viracept, "protease inhibitor antiviral/ antiretroviral/ HIV-I treatment"

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

		Min	Max
Flammability:	1		
Toxicity:	2		
Body Contact:	0		
Reactivity:	1		
Chronic:	2		

Min/Nil=0
Low=1
Moderate=2
High=3
Extreme=4

CANADIAN WHMIS SYMBOLS

EMERGENCY OVERVIEW
RISK

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED
■ Accidental ingestion of the material may be damaging to the health of the individual.
■ Common side effects of treatment with HIV-I protease inhibitors (PI) include diarrhoea, nausea, vomiting, gastrointestinal discomfort, headache, asthenia, fatigue and taste disturbances. Renal calculi (nephrolithiasis) are seen on occasion. Patients receiving highly active antiretroviral therapy (HAART), generally a combination of reverse transcriptase and protease inhibitors, frequently develop lipodystrophy with elevated levels of serum cortisol, lowered levels of serum DHEA (dehydroepiandrosterone) and increased levels of atherogenic lipids (important in the pathogenesis of arteriosclerosis). In one study researchers have also identified lipid abnormalities associated with coronary heart disease, along with alterations in glucose and insulin metabolism amongst patients undergoing HAART. A substantial percentage (71%) of PI-treated patients had hyperlipidaemia compared with only 24% of PI-naive patients. Amongst PI-treated patients, 44% had isolated hypertriglyceridaemia, 7% had type V hyperlipidaemia, 37% had type IV hyperlipidaemia, 36% type IIb hyperlipidaemia, and 18% had isolated hypercholesterolaemia. Fat redistribution and metabolic abnormalities are commonly seen in patients undergoing PI therapies. Up to 83% of individuals taking PIs develop excess belly fat and skinnier arms, legs and faces. A further study found that subcutaneous fat wasting developed in 54% of PI-treated patients compared with 13% of PI-naive patients. The rate of progression to fat wasting was significantly increased with advancing age and white race; earlier therapy with reverse transcription inhibitors also produced an accelerated effect. Another study, however, questions the subjective analysis of such findings and proposes that fat depletion (lipoatrophy/ lipodystrophy) and redistribution does not occur in HIV-therapy. There is support for the idea that changes in lipid and glucose metabolism, after initiation of PI therapy, are a result of central fat accumulation, per se, as central fat accumulation has been postulated to induce glucose intolerance and hyperlipidaemia in HIV-negative populations. PI-treatment has been associated with a higher rate of diabetes mellitus, impaired glucose tolerance, hyperinsulinaemia and early hypersecretion of proinsulin. A pilot study found that 46% of HIV-infected patients receiving PIs had impaired glucose intolerance, a predictor of future diabetes development. PI-treated patients had a higher and prolonged output of insulin during the [oral glucose tolerance test - OGTT] with delayed peak concentrations in the second phase of the test. In contrast, PI-naive patients responded with rapid insulin release in the first phase of OGTT after glucose ingestion.

EYE
■ Although the material is not thought to be an irritant, direct contact with the eye may cause transient discomfort characterized by tearing or conjunctival redness (as with windburn). Slight abrasive damage may also result.

SKIN
■ The material is not thought to produce adverse health effects or skin irritation following contact (as classified using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.
■ Open cuts, abraded or irritated skin should not be exposed to this material.
■ Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

INHALED
■ The material is not thought to produce either adverse health effects or irritation of the respiratory tract following inhalation (as classified using animal models). Nevertheless, adverse effects have been produced following exposure of animals by at least one other route and good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.
■ Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled.

CHRONIC HEALTH EFFECTS
■ Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.
There has been some concern that this material can cause cancer or mutations but there is not enough data to make an assessment.
There is some evidence that inhaling this product is more likely to cause a sensitization reaction in some persons compared to the general population.
Angiolipomas (benign neoplasms of fatty tissue containing a proliferation of, often dilated, blood vessels) may represent a complication of protease-inhibitor (PI) therapy. A lipodystrophy syndrome, characterised by peripheral lipoatrophy and central adiposity, as well as hyperlipidaemia and insulin resistance, develops in many HIV-infected patients undergoing PI therapy. Several cases of patients who developed symptomatic angiolipomas after starting PI-therapy have now been reported. Symptomatic appearance of the lesions followed initiation of PIs by many months. The time course is similar to that reported for the appearance of central fat redistribution after beginning protease inhibitors. One study revealed a higher than expected prevalence of premature carotid vessel lesions in a HIV-patient group treated with PIs for at least 12 months. The overwhelming difference between the percentages of acquired lesions reported for healthy individuals (6.7%) and two seropositive groups including PI-naive (14.9%) and PI-experienced (52.7%) patients indicates that HIV-I positive patients have a much higher risk of endothelial damage which becomes remarkable in the case of patients treated with

PI-containing regimes for prolonged periods of time. Individuals exhibiting the acquired lesion may be at increased risk of developing arteriosclerosis and vascular dysfunction. A significant number of HIV-infected individuals develop type 2 diabetes within 18 months of undertaking PI therapy. Myocardial infarction has also reportedly been associated with PI therapy (after 24-29 months of treatment). Several cases of disfiguring striae (stretch marks) in HIV-patients using PIs have been described; these occurred within 3-months of the start of therapy. The development of resistance and subsequent loss of drug activity constitutes the primary barrier to long-term efficacious use of HIV-I protease inhibitors. Mutations within the protease gene have been described following use of current inhibitors.
Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis; caused by particles less than 0.5 micron penetrating and remaining in the lung.
Alkyl-substituted sulfonates are thought to induce genetic mutations in cells.
Exposure to Sulfonates can cause an imbalance in cellular salts and therefore cellular function. Airborne sulfonates may be responsible for respiratory allergies and, in some instances, minor dermal allergies.
Nelfinavir was not mutagenic or clastogenic in a battery of in vivo and in vitro tests.
Nelfinavir produced no effects on either female or male mating and fertility or embryo survival in rat studies at exposures comparable with human therapeutic exposure. There were no effects on foetal development and maternal toxicity in pregnant rats at systemic exposures similar to those produced in humans undergoing therapy.
No adverse effects on foetal development were seen in rabbits up to the dose which produced slight maternal toxicity.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
nelfinavir mesylate	159989-65-8	>98

Section 4 - FIRST AID MEASURES

SWALLOWED
· If swallowed do NOT induce vomiting. · If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.

EYE
■ If this product comes in contact with the eyes: · Wash out immediately with fresh running water. · Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.

SKIN
■ If skin or hair contact occurs: · Flush skin and hair with running water (and soap if available). · Seek medical attention in event of irritation.

INHALED
· If dust is inhaled, remove from contaminated area. · Encourage patient to blow nose to ensure clear passage of breathing. · If irritation or discomfort persists seek medical attention.

NOTES TO PHYSICIAN
■ For HIV-proteinase inhibitors: Onset or aggravation of diabetes mellitus may require initiation or dose-adjustments of insulin or oral hypoglycaemic agents. Where diabetic ketoacidosis has occurred , hyperglycaemia may persist even after dicontinuance of PI therapy.
Treat symptomatically.
If indicated elimination of unabsorbed drug should be achieved by emesis or gastric lavage.
Administration of activated charcoal may also be used.
Since the drug is highly protein bound, dialysis is unlikely to significantly remove the drug from blood.

Section 5 - FIRE FIGHTING MEASURES

Vapour Pressure (mmHG):	Negligible
Upper Explosive Limit (%):	Not available
Specific Gravity (water=1):	Not available
Lower Explosive Limit (%):	Not available

EXTINGUISHING MEDIA
· Water spray or fog.
· Foam.

FIRE FIGHTING
· Alert Emergency Responders and tell them location and nature of hazard.
· Wear breathing apparatus plus protective gloves.

GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS
· Combustible solid which burns but propagates flame with difficulty.
· Avoid generating dust, particularly clouds of dust in a confined or unventilated space as dusts may form an explosive mixture with air, and any source of ignition, i.e. flame or spark, will cause fire or explosion. Dust clouds generated by the fine grinding of the solid are a particular hazard; accumulations of fine dust may burn rapidly and fiercely if ignited.

Combustion products include: carbon monoxide (CO), carbon dioxide (CO2), nitrogen oxides (NOx), sulfur oxides (SOx), other pyrolysis products typical of burning organic material.
May emit poisonous fumes.

FIRE INCOMPATIBILITY

■ Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids,chlorine bleaches, pool chlorine etc. as ignition may result.

PERSONAL PROTECTION

Glasses:
Chemical goggles.
Gloves:
Respirator:
Particulate

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS
· Clean up waste regularly and abnormal spills immediately.
· Avoid breathing dust and contact with skin and eyes.
· Wear protective clothing, gloves, safety glasses and dust respirator.
· Use dry clean up procedures and avoid generating dust.
· Vacuum up or sweep up. NOTE: Vacuum cleaner must be fitted with an exhaust micro filter (HEPA type) (consider explosion-proof machines designed to be grounded during storage and use).
· Dampen with water to prevent dusting before sweeping.
· Place in suitable containers for disposal.
MAJOR SPILLS
■ Moderate hazard.
· CAUTION: Advise personnel in area.
· Alert Emergency Responders and tell them location and nature of hazard.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

· Avoid all personal contact, including inhalation.
· Wear protective clothing when risk of exposure occurs.
Empty containers may contain residual dust which has the potential to accumulate following settling. Such dusts may explode in the presence of an appropriate ignition source.
· Do NOT cut, drill, grind or weld such containers.
· In addition ensure such activity is not performed near full, partially empty or empty containers without appropriate workplace safety authorisation or permit.

RECOMMENDED STORAGE METHODS

■ Glass container.
· Polyethylene or polypropylene container.
· Check all containers are clearly labelled and free from leaks.

STORAGE REQUIREMENTS

■ Observe manufacturer's storing and handling recommendations.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records
• nelfinavir mesylate: CAS:159989-65-8

PERSONAL PROTECTION



RESPIRATOR

Particulate

Consult your EHS staff for recommendations

EYE

■ When handling very small quantities of the material eye protection may not be required.
For laboratory, larger scale or bulk handling or where regular exposure in an occupational setting occurs:
· Chemical goggles
· Face shield. Full face shield may be required for supplementary but never for primary protection of eyes
· Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

HANDS/FEET

■ Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include: such as:
· frequency and duration of contact,
· chemical resistance of glove material,
· glove thickness and
· dexterity
Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739).
· When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended.
· When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended.
· Contaminated gloves should be replaced.
Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.
· Rubber gloves (nitrile or low-protein, powder-free latex). Employees allergic to latex gloves should use nitrile gloves in preference.
· Double gloving should be considered.
· PVC gloves.
· Protective shoe covers.
· Head covering.
Experience indicates that the following polymers are suitable as glove materials for protection against undissolved, dry solids, where abrasive particles are not present.
· polychloroprene
· nitrile rubber
· butyl rubber
· fluorocaoutchouc
· polyvinyl chloride
Gloves should be examined for wear and/ or degradation constantly.

OTHER

· For quantities up to 500 grams a laboratory coat may be suitable.
· For quantities up to 1 kilogram a disposable laboratory coat or coverall of low permeability is recommended. Coveralls should be buttoned at collar and cuffs.
· For quantities over 1 kilogram and manufacturing operations, wear disposable coverall of low permeability and disposable shoe covers.
· For manufacturing operations, air-supplied full body suits may be required for the provision of advanced respiratory protection.
· Eye wash unit.
· Ensure there is ready access to an emergency shower.
· For Emergencies: Vinyl suit.

ENGINEERING CONTROLS

■ Enclosed local exhaust ventilation is required at points of dust, fume or vapor generation.
HEPA terminated local exhaust ventilation should be considered at point of generation of dust, fumes or vapors.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES

Solid.
Mixes with water.

State	Divided solid	Molecular Weight	663.97
Melting Range (°F)	Not available	Viscosity	Not available
Boiling Range (°F)	Not available	Solubility in water (g/L)	Miscible
Flash Point (°F)	Not available	pH (1% solution)	Not available
Decomposition Temp (°F)	Not available	pH (as supplied)	Not applicable
Autoignition Temp (°F)	Not available	Vapour Pressure (mmHG)	Negligible

Upper Explosive Limit (%)	Not available	Specific Gravity (water=1)	Not available
Lower Explosive Limit (%)	Not available	Relative Vapor Density (air=1)	Not applicable
Volatile Component (%vol)	Negligible	Evaporation Rate	Not applicable

APPEARANCE
White to off-white crystalline powder; mixes with water.

Section 10 - CHEMICAL STABILITY

CONDITIONS CONTRIBUTING TO INSTABILITY
· Presence of incompatible materials.
· Product is considered stable.

STORAGE INCOMPATIBILITY
■ Avoid reaction with oxidizing agents.

For incompatible materials - refer to Section 7 - Handling and Storage.

Section 11 - TOXICOLOGICAL INFORMATION

NELFINAVIR MESYLATE

TOXICITY AND IRRITATION
NELFINAVIR MESYLATE:
■ unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY	IRRITATION
Oral (Rat) LD: >500 mg/kg	
Oral (Mouse) LD: >500 mg/kg	

■ No significant acute toxicological data identified in literature search.
Changes in liver weight, endocrine changes, diarrhoea reported.

Section 12 - ECOLOGICAL INFORMATION

No data

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Instructions
All waste must be handled in accordance with local, state and federal regulations.
¦ Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.
A Hierarchy of Controls seems to be common - the user should investigate:
· Reduction
· Reuse
· Recycling
· Disposal (if all else fails)
This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.
DO NOT allow wash water from cleaning equipment to enter drains. Collect all wash water for treatment before disposal.
· Recycle wherever possible.
· Consult manufacturer for recycling options or consult Waste Management Authority for disposal if no suitable treatment or disposal facility can be identified.

Section 14 - TRANSPORTATION INFORMATION

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: DOT, IATA, IMDG

Section 15 - REGULATORY INFORMATION

No data for nelfinavir mesylate (CAS: , 159989-65-8)

Section 16 - OTHER INFORMATION

Reasonable care has been taken in the preparation of this information, but the author makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The author makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from its use. For additional technical information please call our toxicology department on +800 CHEMCALL.

■ Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.
A list of reference resources used to assist the committee may be found at:
www.chemwatch.net/references.

■ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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