



health

Department:
Health
REPUBLIC OF SOUTH AFRICA



Private Bag X828, PRETORIA, 0001 Dr AB Xuma Building 1112 Voortrekker Road, Pretoria Townlands 351-JR,
PRETORIA, 0187 Tel (012) 395 8000, Fax (012) 395 8918

Mr C Mukaratiwa
Cospharm Investments (Pty) Ltd
2 Concourse Crescent
Lonehill
Johannesburg

Dear Mr Mukaratiwa

Section 21 Authorization for GLYCERYL TRINITRATE 1MG/ML INJECTION

Attached, please find the Authorization for exemption under Section 21 of the Medicines and Related Substances Act by SAHPRA granted for:

- **Glyceryl Trinitrate 1mg/ml Injection**

The quantities for which approval was granted are only estimates based on procurement by provinces over the last 6 months. Please note that the National Department of Health (NDOH) cannot guarantee the procurement of these quantities, as NDOH has no control over orders being placed by provincial depots, and current stock holding might influence estimated quantities.

The following process will be followed to ensure the quality of the product being brought in:

1. Manufacturer will submit an assay and identification of every batch imported.
2. An additional assay of every batch will be done by a quality control laboratory.
3. A random sample will be assayed during the authorized period by a quality control laboratory.
4. Aggregate statistics to be submitted to NDOH in the first week of each month of all orders received and quantities supplied per province.
5. The NDOH needs to be advised of the quantities and date of arrival of stocks in terms of this authorization within 7 days after arrival.
6. The supplier will provide monthly reports, by the 7th of each month, using the attached format of orders received and issues done.
7. Participating Authorities (PAs) will provide a consolidated close out report of usage using the attached format on the date when an authorization lapses.
8. The full quantities imported in terms of this Section 21 authorisation must be accounted for.
9. Note that this authorization DOES NOT cover supplies to the private sector.

Department of Health • Lefapha la Pholo • Lefapha la Bophelo • uMnyango wezeMpilo • Muhasho wa Mutakalo • Departement van Gesondheid • Kgoro ya Maphelo • Ndzawulo ya Rihanyo • LiTiko le Thempilo • ISebe lezeMpilo • UmNyango WezamaPhilo

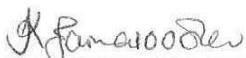
10. Where this authorization is obtained to provide security of supply due to supply challenges from the contracted supplier, PAs are requested to buy out against contracted suppliers and ensure that related orders are cancelled accordingly to prevent overstocking once the contracted supplier gets back into stock.

It should be noted this authorization applies only for use of the product in the public sector with estimated usage quantities for a period of one month. The authorization is expected to expire on **21 February 2027**.

Table 1: Provincial estimates

Province	Six Months Estimate
Correctional Services	0
EC-MT	0
EC-PE	480
FS	360
GP	4 000
KZN	3 000
LP	10
MP	233
NC	200
NW	1 680
SAMHS	10
WC	1 200
Total	11 173

Yours sincerely


KHADIJA JAMALOODIEN
CHIEF DIRECTOR: HEALTH PRODUCTS PROCUREMENT
DATE: 24/8/2026

Section 21 Outcome Letter

2026-08-21

Ms Khadija Jamaloodien

Dr AB Xuma, National Department Of Health, Voortrekker Road, Pretoria Townlands 351-Jr,
Pretoria, South Africa, Voortrekker Road, Pretoria Townlands 351-Jr, Pretoria, Gauteng, South
Africa, 0187

Pretoria

buhle.mbongo@health.gov.za

Dear Ms Khadija Jamaloodien

REQUEST TO USE UNREGISTERED MEDICINE IN TERMS OF SECTION 21 OF THE MEDICINES AND CONTROLLED SUBSTANCES ACT, 1965 (ACT 101 of 1965):

Your application dated **2026-08-14** refers

- A. STATUS: Approved**
- B. APPLICANT: Ms Khadija Jamaloodien**
- C. IMPORTING COMPANY: COSPHARM INVESTMENTS (PTY) LTD**
- D. NUMBER OF PATIENT/(S) INTENDED TO BE TREATED: 1**
- E. UNREGISTERED MEDICINES: GENERIC NAME (INN / ACTIVE INGREDIENT):
Glyceryl trinitrate solution**
- F. TRADE NAME: Nitroglycerin 1 mg/mL**

G. QUANTITY: 11160 Packs (1)

H. LETTER NUMBER: S2100035529

Section 21 authorization letters are valid for a period of 6 months from the letter date, unless otherwise specified.

A progress report must be submitted once treatment is completed or on a reauthorization request

Comments:

No Data

Yours faithfully,

Shyamli Munbodh

Manager: Section 21 Category A Medicines

A handwritten signature in blue ink, appearing to read 'Shyamli Munbodh', enclosed within a thin black rectangular border.



health

Department:
Health
REPUBLIC OF SOUTH AFRICA



Private Bag X828, PRETORIA, 0001 Dr AB Xuma Building 1112 Voortrekker Road, Pretoria Townlands 351-JR, PRETORIA,
0187 Tel (012) 395 8000, Fax (012) 395 8918

REQUEST FOR QUOTATION FORM

- Instruction to complete this Request for Quotation (RFQ)**
PLEASE PROVIDE A QUOTE FOR THE FOLLOWING PRODUCT(S).
PLEASE QUOTE ON THIS RFQ FORM AND ATTACH YOUR QUOTE WITH THE REQUESTED DETAILS.
THE SECTIONS HIGHLIGHTED IN YELLOW MUST BE COMPLETED BY THE SUPPLIER.
- THIS DOES NOT CONSTITUTE ANY OBLIGATION TO PROCURE THE ITEM AS THIS WILL BE SUBMITTED FOR CONSIDERATION TO PROVINCIAL PROCUREMENT UNITS TO SERVE AS A BUY OUT AGAINST CURRENT NON-COMPLIANT SUPPLIERS.**

ONLY RESPONSES FROM DULY REGISTERED SUPPLIERS WILL BE EVALUATED

REFERENCE NUMBER:	NORMAL		SECTION 21	X	S21RFQ182/2026
QUOTE ENQUIRY DATE	31/07/2026	QUOTE CLOSING DATE			07/08/2026
FOR CRITICAL DELIVERY, DELIVERY REQUESTED ON/BEFORE (SCM Practitioner to Specify if applicable)					

REQUESTING INSTITUTION CONTACT DETAILS

NAME OF REQUESTOR	Buhle Mbongo		
EMAIL ADDRESS	Buhle.Mbongo@health.gov.za		
PHONE No.	066 261 4234	FAX No.	N/A

PRODUCT INFORMATION

DESCRIPTION PER MPC	Glyceryl Trinitrate 1mg Injection		
TRADE DESCRIPTION	Nitroglycerin Injection USP 10 mg/10 ml (1 mg/ml)		
UNIT OF MEASURE	Vials	PACK or BOX (<u>SIZE/ QUANTITY</u>)	1 vial
QUANTITY REQUIRED	11 173		

TO BE COMPLETED BY THE SUPPLIER/ SERVICE PROVIDER

SUPPLIER CONTACT DETAILS (as per CSD)

DID YOU BID ITEM FOR TENDER	YES		NO	X	IF NO, WHY	Product not registered
COMPANY NAME	Cospharm Investment (Pty) Ltd					
SUPPLIER NUMBER	MAAA0922336					
SECURITY CODE	1DED17CF-07F8-4709-9F5F-6E477D4359AE					
SUPPLIER CODE (NDoH)	VK0P8					
CONTACT PERSON 1	NAME	VIBHA DESAI				
	PHONE	010 110 9348			FAX	
	MOBILE	0832367123				
	E-MAIL	rp@cospharm.org				
CONTACT PERSON 2	NAME	GLENDA MOROBANE				
	PHONE	010 110 9348				

	MOBILE	060 908 8468	
	E-MAIL	marketingza1@cospharm.org	
<u>QUOTE DETAILS</u>			
PRICE PER UNIT (INCL. VAT)	R29.0605	TOTAL PRICE (INCL. DELIVERY & VAT)	R324 692.97
VOLUMES AVAILABLE – 14DAYS			
VOLUMES AVAILABLE – 21DAYS			
VOLUMES AVAILABLE – 28DAYS			
VOLUMES AVAILABLE – 35DAYS			
VOLUMES AVAILABLE – 42DAYS			
VOLUMES AVAILABLE – 49DAYS			
VOLUMES AVAILABLE – 56DAYS	11192		
VOLUMES AVAILABLE – 112DAYS			
QUOTE VALIDITY PERIOD	90 days		
NORMAL LEAD/DELIVERY TIME	90 days		
<u>DEVIATION TO SPECIFICATION</u>			
COMMENTS:			
<u>DECLARATION BY SUPPLIER</u>			
I hereby declare that in submitting this bid, there has been no consultation, communication, agreement or arrangement with any competitor/supplier regarding the price, quality, quantity, specifications and conditions or delivery particulars of the products or services to which this bid invitation relates.			
NAME	VIBHA DESAI		
CAPACITY	RESPONSIBLE PHARMACIST		
SIGNATURE (OF A DULY AUTHORISED REPRESENTATIVE OF THE SUPPLIER)			
DATE	06/08/2026		
<u>PROVINCIAL ESTIMATES</u>			
Province	Six Months Estimate		
DCS	0		
EC-MT	0		
EC-PE	480		
FS	360		
GP	4 000		
KZN	3 000		
LP	10		

MP	233
NC	200
NW	1 680
SAMHS	10
WC	1 200
<i>Please submit quotations to Buhle.Mbongo@health.gov.za</i>	

Please ensure that you include the following as part of the Quotation:

- Delivery Time (Weeks)
- Price (Vat Inclusive)
- Generic Name
- Trade Name
- Quotation on Official Company Letterhead
- Central Supplier Database Summary Report (CSD)
- Medicine Registration Certificate (Only for Locally Registered Products)
- *Artwork/Labelling
- *Package Insert: (Please attach)
- *Manufacturer Certificate: (Please attach)
- *Country of Origin: (Please indicate)

*Additional items required when submitting a quote for a Section 21 Item (Unregistered Medicine)
All of the above is required to expedite the process in considering the quotation.

Please **SUBMIT COMPLETED RFQ FORM AND QUOTATIONS ON AN OFFICIAL COMPANY LETTERHEAD**

NB:

- The supplier submitting the quotation must be the same entity which the provinces will place their orders
- The size of each individual attachment must not be more than 2MB (you may attach multiple files in one email but collectively they should not be more than 2MB in size).
- Please ensure that you provide all prescribed documentation that is outlined on page two of this RFQ.
- The confirmation letter from manufacturer to Supply South Africa with Bivalent oral Poliomyelitis Vaccine (bOPV) must be provided (only in cases of Bivalent oral Poliomyelitis Vaccine RFQ)
- Kindly be advised that a picture format of an Artwork shall not be accepted. Artwork must be in pdf or word format only.
- All prices must please be submitted in two decimals and in ZAR.
- If submitting more than one quotation, please make sure that your subject line includes e.g., 1 of 2 or 1 of 3 etc.
- Any submission with missing documentation shall not be considered.
- Any submission with blurry relevant documents shall not be considered.
- The only electronic GMP Certificate considered is that from EUDRA
- CSD must be updated for the current month of the RFQ date.
- **Email subject line for responses with quotes must be kept unchanged from the originally sent RFQ email.**

Please **SUBMIT COMPLETED RFQ FORM AND QUOTATIONS ON AN OFFICIAL COMPANY LETTERHEAD**



QUOTATION

Date 06/08/2026

VAT Reg No.:	4640290963
Reg no:	2018/468705/07
Quote No.	S21RFQ182/2026
Reference:	Nitroglycerin

FROM: COSPHARM INVESTMENTS (PTY)LTD	TO: DEPARTMENT OF HEALTH
2 Concourse Crescent Lonehill Johannesburg 010 110 9348	Dr AB Xuma Building 1112, Voortrekker Road Pretoria Townlands 315 JR Pretoria, 0187 012 395 8000

BANKING DETAILS
COSPHARM INVESTMENTS (PTY) LTD
FNB
Account Number: 62850218241
Branch Code: 254605
Branch: Sandton City

Item Code	Item Description	Quantity	Disc %	Unit Price excl	Unit Price incl	Total (Incl)
NIT001	NITROGLYCERIN INJECTION USP 10 MG/10 ML (1 MG/ML)	11 173	0	R25,27	R 29,06	R 324 692,97

Validity Period: 90 Days
Lead Times: 12 weeks after receipt of a formal Purchase Order
Country of origin: India
Manufacturer: Kwalitiy

SubTotal (Excl)	R	282 341,71
VAT Total at 15%		42 351,26
Invoice Total ZAR	R	324 692,97

Name: Vibha Desai

Signature:

NITROGLYCERIN INJECTION USP

10 mg/10ml (1mg/ml)

COMPOSITION

Each ml contains:

Diluted Nitroglycerin USP

eq. to Nitroglycerin 1 mg

Water for Injection USP q.s.

GENERAL INFORMATION

It is an anti-anginal drug.

MOA

Nitrates cause direct, non-specific smooth muscle relaxation. This effect occurs due to production of nitric oxide which stimulates formation of cGMP in the smooth muscle cells which leads to dephosphorylation of myosin light chain resulting in smooth muscle relaxation. Repeated frequent administration of high dose of organic nitrates leads to decrease in magnitude of most of their pharmacological actions.

They cause more venodilatation than arteriolar dilatation, hence pre-load and diastolic pressure is reduced which leads to decreased cardiac work.

PHARMACOKINETICS:

Pharmaco Kinetic

Administered by sublingual route, it is absorbed rapidly.

On Set of Action

SL: 1-3 minutes; I.V.: 1-2 minutes.; SR: 20-45 minutes; topical ointment: 30 to 60 minutes.

Duration of Action

SL: 30-60 minutes; I.V.; 3-5minutes; SR: 3-8 hours.

INDICATIONS

I.V.: Unstable angina, coronary vasospasm, LVF accompanying MI, hypertension during cardiac surgery.

DOSAGE

Initially 5 mcg/minute through infusion. Increase with increments of 5 mcg/minute. SR/CR: 2.5-6.5 mg 8-12 hourly.

Children: Not applicable.

CONTRAINDICATIONS

Cerebral trauma, cerebral haemorrhage, hypertrophic cardiomyopathy.

ADVERSE EFFECTS

Throbbing headache, weakness, sweating, flushing, dizziness, tachycardia, palpitation, methaemoglobinaemia, fainting.

SPECIAL PRECAUTIONS

Pulmonary disease, cerebrovascular disease.

INTERACTIONS

Alcohol: Severe hypotension and cardiovascular collapse.

Aspirin: Increase serum concentrations of nitrates and their actions.

Antihypertensives, TCAs, Phenothiazine, Calcium channel blockers: Marked symptomatic orthostatic hypotension.

Lab Tests: May interfere with the Zlatkis-Zak colour reaction causing a false report of decreased serum cholesterol.

STORAGE :

Store between temperature 20°C to 25°C. Protect from light.

Keep out of the reach of children.

PRESENTATION

Each 10ml vial packed in a printed carton.

Manufactured by:

Kwality Pharmaceuticals Ltd.

Nag Kalan, Majitha Road,
Amritsar - 143 601, INDIA

NITROGLYCERIN INJECTION USP

10 mg/10ml (1mg/ml)

Each ml contains:

Diluted Nitroglycerin USP

eq. to Nitroglycerin 1 mg

Water for Injection USP q.s.

Pharmaceutical form

Solution for infusion

The product is a clear and colourless solution.

Clinical particulars Therapeutic indications

The following indications exist for Glyceryl Trinitrate:

- Unresponsive congestive heart failure, including that secondary to acute myocardial infarction; acute left-sided heart failure and acute myocardial infarction,
- Refractory unstable angina pectoris and coronary insufficiency, including Prinzmetal's angina,
- Control of hypertensive episodes and/or myocardial ischaemia during and after cardiac surgery,
- Induction of controlled hypotension for surgery.

Posology and method of administration Posology

Adults

The dose of Glyceryl Trinitrate should be adjusted to meet the individual needs of the patient.

The recommended dosage range is 10 - 200 micrograms/min but up to 400 micrograms/min may be necessary during some surgical procedures.

Paediatric population

The safety and efficacy of Glyceryl Trinitrate has not yet been established in children.

Elderly population

There is no evidence that a posology adjustment is required in the elderly

Patients with renal and hepatic impairment

Additional dose adjustments in patients with severe hepatic insufficiency or severe renal failure may be necessary and require additional monitoring.

Use in surgery

A starting dose of 25 micrograms/min is recommended for the control of hypertension, or to produce hypotension during surgery. This may be increased by increments of 25 micrograms/min at 5 minute intervals until the blood pressure is stabilised. Doses between 10 - 200 micrograms/min are usually sufficient during surgery, although doses of up to 400 micrograms/min have been required in some cases.

Myocardial ischaemia

The treatment of perioperative myocardial ischaemia may be started with a dose of 15 - 20 micrograms/min, with subsequent increments of 10 - 15 micrograms/min until the required effect is obtained.

Unresponsive congestive heart failure:

The recommended starting dose is 20 - 25 micrograms/min. This may be decreased to 10 micrograms/min, or increased in steps of 20-25 micrograms/min every 15 - 30 minutes until the desired effect is obtained.

Unstable angina:

An initial dose of 10 micrograms/min is recommended with increments of 10 micrograms/min being made at approximately 30 minute intervals according to the needs of the patient.

Method of administration

For intravenous use. Glyceryl Trinitrate should be administered by means of a micro-drip set infusion pump or similar device which permits maintenance of constant infusion rate.

Glyceryl Trinitrate can be administered undiluted by slow intravenous infusion using a syringe pump incorporating a glass or rigid plastic syringe.

Alternatively, Glyceryl Trinitrate may be administered intravenously as an admixture using a suitable vehicle such as

Sodium Chloride Injection B.P. or Dextrose Injection B.P. In case of dilution,

Glyceryl Trinitrate must be mixed under

aseptic conditions immediately after opening. For further instructions on dilution of the product before administration, see section 6.6.

Prepared admixtures should be given by intravenous infusion or with the aid of a syringe pump to ensure a constant rate of infusion.

During Glyceryl Trinitrate administration there should be close haemodynamic monitoring of the patient.

The posology of Glyceryl Trinitrate i.v. should be adjusted to achieve the desired clinical response.

Example of admixture preparation

To obtain an admixture of Glyceryl Trinitrate at a concentration of 100 micrograms/ml, add 50 ml Glyceryl Trinitrate

solution (containing 50 mg glyceryl trinitrate) to 450 ml of infusion vehicle to give a final volume of 500 ml.

A dosage of 100 micrograms/min. can be obtained by giving 60 ml of the admixture per hour.

Vials of Glyceryl Trinitrate are for single use only and should not be regarded as multi-dose containers.

Contraindications

Glyceryl Trinitrate should not be used in the following cases:

- Hypersensitivity to the active substance, other nitrates or any of the excipients listed in Section 6.1
- Acute circulatory failure (shock, collapse)
- Cardiogenic shock (unless a sufficient end-diastolic pressure is maintained by appropriate measures)
- Severe anaemia,
- Severe cerebral haemorrhage
- Head trauma
- Uncorrected hypovolaemia and hypotensive shock
- Arterial hypoxaemia and angina caused by hypertrophic obstructive cardiomyopathy
- Constrictive pericarditis
- Pericardial tamponade
- Toxic pulmonary oedema.
- During nitrate therapy, phosphodiesterase inhibitors type 5 (PDE5) (e. g. sildenafil, vardenafil, tadalafil) must not be used because PDE5 inhibitors may amplify the vasodilatory effects of Glyceryl Trinitrate resulting in severe hypotension (see sections 4.4 and 4.5).
- Conditions associated with an increased intracranial pressure.

- Myocardial insufficiency due to obstruction, aortic or mitral stenosis, hypertrophic obstructive cardiomyopathy or constrictive pericarditis. During nitrate therapy, the soluble guanylate cyclase stimulator riociguat must not be used (see section 4.5)

Special warnings and precautions for use

Caution should be exercised in patients with severe liver or renal disease, hypothermia, hypothyroidism.

Glyceryl Trinitrate should not be given by bolus injection.

Glyceryl Trinitrate must be used only with particular caution and under medical supervision in:

- Low filling pressures e.g. in acute myocardial infarction, impaired left ventricular function (left ventricular failure).
- Reducing systolic blood-pressure below 90 mmHg must be avoided;
- Orthostatic dysfunction.

The development of tolerance and cross tolerance to other nitro compounds has been described.

Glyceryl Trinitrate must not be used in patients known to be taking

phosphodiesterase inhibitor-containing products (e.g.

sildenafil, vardenafil, tadalafil) in the intervening 24 hours (48 hours for tadalafil).

Patients who receive Glyceryl Trinitrate

solution therapy must be warned not to take phosphodiesterase inhibitor-

containing products (e.g. sildenafil, vardenafil,

tadalafil) (see sections 4.3 and 4.5).

During treatment with Glyceryl Trinitrate, alcohol should be avoided as it may

potentiate the hypotensive and

vasodilating effects of Glyceryl Trinitrate (see section 4.5).

Materials made of polyethylene (PE), polypropylene (PP) or

polytetrafluorethylene (PTFE) have proven to be suitable

for infusing Glyceryl Trinitrate solution. However, infusion material made of

polyvinyl chloride (PVC) or polyurethane

(PU) has been shown to induce a loss of the active substance due to

adsorption. If these materials are used the dose

must be adjusted to suit patient's needs (see also section 6.2).

The solution contains glucose; this should be taken into account in patients with diabetes mellitus.

Hypoxaemia:

Caution should be exercised in patients with arterial hypoxaemia due to severe anaemia (including G6PD deficiency

induced forms), because in such patients the biotransformation of nitroglycerin

is reduced.

Similarly, caution is called for in patients with hypoxaemia and

ventilation/perfusion imbalance due to lung disease or

ischaemic heart failure.

Patients with angina pectoris, myocardial infarction, or cerebral ischaemia

frequently suffer from abnormalities of the

small airways (especially alveolar hypoxia).

Under these circumstances vasoconstriction occurs within the lung to shift

perfusion from areas of alveolar hypoxia to

better ventilated regions of the lung (see also section 4.8). As a potent

vasodilator, nitroglycerin could reverse this

protective vasoconstriction and thus result in increased perfusion of poorly

ventilated areas, worsening of the

ventilation/perfusion imbalance, and a further decrease in the arterial partial

pressure of oxygen.

Methaemoglobinaemia

Following treatment with Glyceryl Trinitrate, methaemoglobinaemia has been

reported. Treatment of

methaemoglobinaemia with methylene blue is contraindicated in patients with

glucose-6-phosphate deficiency or

methaemoglobin-reductase deficiency (see also section 4.9).

Interaction with other medicinal products and other forms of interaction

Concomitant treatment with other vasodilators, calcium channel antagonists,

ACE inhibitors, monoamine oxidase

inhibitors, beta-blockers, diuretics, antihypertensives, tricyclic antidepressants

and neuroleptics, as well as the

consumption of alcohol, may potentiate the hypotensive effect of the

preparation.

The blood pressure lowering effect of Glyceryl Trinitrate will be increased if used

together with phosphodiesterase

inhibitors (e.g. sildenafil, vardenafil, tadalafil) which are used for erectile

dysfunction (see Section 4.3). This might lead

to life threatening cardiovascular complications. Patients who have recently

taken phosphodiesterase inhibitors (e.g.

sildenafil, vardenafil, tadalafil) therefore must not be treated with Glyceryl

Trinitrate in the intervening 24h (48h for

tadalafil). Patients who are on nitrate therapy must not use phosphodiesterase

inhibitors (e.g. sildenafil, vardenafil,

tadalafil).

The use of Glyceryl Trinitrate with riociguat, a soluble guanylate cyclase

stimulator, is contraindicated (see section 4.3).

since concomitant use can cause hypotension.

Simultaneous intravenous infusions of tissue plasminogen activator (tPA) and

glyceryl trinitrate may accelerate plasma

clearance of tPA by increasing hepatic blood flow.

Reports suggest that, when administered concomitantly, Glyceryl Trinitrate may

increase the blood level of

dihydroergotamine and its effect. This warrants special attention in patients with

coronary artery disease, because

dihydroergotamine antagonises the effect of Glyceryl Trinitrate and may lead to

coronary vasoconstriction.

The use of heparin and Glyceryl Trinitrate solution can lead to a partial loss of

action of heparin when both drugs are

given simultaneously by intravenous route.

Concurrent administration of Glyceryl Trinitrate with acetyl salicylic acid may

potentiate the blood pressure lowering

effects of Glyceryl Trinitrate.

The non-steroidal anti-inflammatory drugs except acetyl salicylic acid may

diminish the therapeutic response of Glyceryl

Trinitrate.

Sapropterine (Tetrahydrobiopterine, BH4) is a cofactor for nitric oxide

synthetase. Caution is recommended during

concomitant use of sapropterine-containing medicine with all agents that cause

vasodilation by affecting nitric oxide

(NO) metabolism or action, including classical NO donors (e.g. glyceryl trinitrate

(GTN), isosorbide dinitrate (ISDN).

isosorbide 5-mononitrate (5-ISMN) and others).

Fertility, pregnancy and lactation Pregnancy

Developmental toxicity studies performed in rats and rabbits using various

routes of administration did not reveal any

effect on the embryos, fetuses or the young animals even at toxic doses for the

dam.

Breast-feeding

Available evidence is inconclusive or inadequate for determining infant risk

when used during breastfeeding. There is

data that nitrates are excreted in breast milk and may cause

methaemoglobinaemia in infants. The extent of excretion of

nitroglycerin in human breast milk has not been determined. A risk to the

suckling child cannot be excluded.

A decision must be made whether to discontinue breast-feeding or to

discontinue/abstain from Glyceryl Trinitrate

therapy taking into account the benefit of breast feeding for the child and the

benefit of therapy for the woman.

Fertility

Reproduction toxicity studies performed in rats and rabbits using various routes of administration did not reveal any effect on mating, fertility and general reproductive parameters. There is no data available on the effect of Glyceryl Trinitrate on fertility in humans.

Effects on ability to drive and use machines

Glyceryl Trinitrate may affect the patient's reactivity to an extent that her/his ability to drive or to operate machinery is impaired. This effect is increased in combination with alcohol.

Undesirable effects

Undesirable effects frequencies are defined as: very common (≥1/10), common (≥1/100 <1/10), uncommon (≥1/1,000 <1/100), rare (≥1/10,000 <1/1,000) or very rare (<1/10,000), not known (cannot be estimated from the available data). During administration of Glyceryl Trinitrate the following undesirable effects may be observed

Nervous system disorders:	Very Common: Headache Common: Dizziness (including dizziness postural), somnolence
Cardiac disorders:	Common: Tachycardia Uncommon: Enhanced angina pectoris symptoms Not known: Palpitations
Vascular disorders:	Common: Orthostatic Hypotension Uncommon: Circulatory collapse (sometimes accompanied by bradyarrhythmia and syncope) Not known: Flushing, Hypotension
Gastrointestinal disorders:	Uncommon: Nausea, Vomiting Very rare: Heartburn
Skin and subcutaneous tissue disorders:	Uncommon: Allergic skin reactions (e.g. rash,) Allergic contact dermatitis. Not known: dermatitis exfoliative, Rash Generalized.
General disorders and administration site conditions:	Common: asthenia Uncommon: pruritus, burning, erythema and irritation.
Investigations	Not known: Heart rate increase

Severe hypotensive responses have been reported for organic nitrates and include nausea, vomiting, restlessness, pallor and excessive perspiration. During treatment with Glyceryl Trinitrate, a temporary hypoxemia may occur due to a relative redistribution of the blood flow in hypoventilated alveolar areas. Particularly in patients with coronary artery disease this may lead to a myocardial hypoxia. Like other nitrate preparations, Glyceryl Trinitrate commonly causes dose-dependent headaches due to cerebral vasodilation. These often regress after a few days despite the maintenance of therapy. If headaches persist during intermittent therapy, they should be treated with mild analgesics. Unresponsive headaches are an indication for reducing the dosage of Glyceryl Trinitrate or discontinuing treatment. A slight reflex-induced increase in heart rate can be avoided by resorting, if necessary, to combined treatment with a beta-blocker.

Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via the Yellow Card Scheme at: www.mhra.gov.uk/yellowcard or search for MHRA Yellow Card in the Google Play or Apple App Store.

Overdose Symptoms of overdose

Symptoms could include the following:

- Fall in blood pressure ≤ 90 mmHg
- Pallor
- Sweating
- Weak pulse
- Reflex tachycardia
- Collapse
- Syncope
- Dizziness postural
- Headache
- Asthenia
- Dizziness
- Nausea
- Vomiting
- Diarrhoea
- Methaemoglobinaemia has been reported in patients receiving other organic nitrates. During glyceryl trinitrate biotransformation nitrite ions are released, which may induce methaemoglobinaemia and cyanosis with subsequent tachypnoea, anxiety, loss of consciousness and cardiac arrest. It cannot be excluded that an overdose of glyceryl trinitrate may cause this adverse reaction
- In very high doses the intracranial pressure may be increased. This might lead to cerebral symptoms.

Treatment of overdose

General procedure:

- Stop delivery of the drug.
- General procedures in the event of nitrate-related hypotension:
 - Patient should be kept horizontal with the head lowered and legs raised or, if necessary, compression bandaging of the patient's legs
 - Supply oxygen
 - Expand plasma volume
 - For specific shock treatment admit patient to intensive care unit
- Special procedure:
 - Raising the blood pressure if the blood pressure is very low
 - Treatment of methaemoglobinaemia:
 - Treatment with intravenous methylene blue
 - Initially 1 to 2 mg/kg, not exceeding 4 mg/kg of a 1% solution over 5 minutes.
 - Repeat dose in 60 minutes if there is no response.
 - Administer oxygen (if necessary)
 - Initiate artificial ventilation
 - Treatment of methaemoglobinaemia with methylene blue is contraindicated in patients with glucose-6-phosphate dehydrogenase (G-6-PD) deficiency or methaemaglobin reductase deficiency (see also section 4.4).

Where treatment with methylene blue is contraindicated or is not effective, exchange transfusion and / or transfusion of packed red blood cells is recommended. *Resuscitation measures:* In case of signs of respiratory and circulatory arrest, initiate resuscitation

measures immediately.

Pharmacological properties

Pharmacodynamic properties

Pharmacotherapeutic group: vasodilators used in cardiac diseases
ATC-Code: C01DA02 Organic nitrates

Pharmacodynamic effects

Glyceryl trinitrate reduces the tone of vascular smooth muscle. This action is more marked on the venous capacitance vessels than the arterial vessels. There is a reduction in venous return to the heart and a lowering of elevated filling pressure. This lowering of filling pressure reduces the left ventricular end diastolic volume and preload. The net effect is a lowering of myocardial oxygen consumption. Systemic vascular resistance, pulmonary vascular pressure and arterial pressure are also reduced by glyceryl trinitrate and there is a net reduction in the afterload. By reducing the preload and afterload, glyceryl trinitrate reduces the workload on the heart. Glyceryl trinitrate affects oxygen supply by redistributing blood flow along collateral channels from the epicardial to endocardial regions.

Pharmacokinetic properties Biotransformation

As with all commonly used organic nitrates the metabolic degradation of glyceryl trinitrate occurs via denitration and glucuronidation. The less active metabolites resulting from this biotransformation can be recovered from the urine within 24 hours.

Elimination

Glyceryl trinitrate is eliminated from plasma with a short half-life of about 2-3 minutes. This rapid disappearance from plasma is consistent with the high systemic clearance values for this drug (up to 3270 L/hour)

Preclinical safety data

Conventional studies of acute and repeated dose toxicity reveal no special hazard to humans.

Reproductive and Developmental Toxicity:

Reproductive toxicity studies, in rats and rabbits using various routes of administration did not show any adverse effects on fertility or embryo foetal development at dosages which did not induce parental toxicity.

Mutagenicity:

Standard mutagenicity tests provided contradictory results in vitro, however in vivo studies provided no evidence of genotoxicity.

Carcinogenicity:

Long term dietary studies in rodents led to the conclusion that Glyceryl trinitrate has no carcinogenic effect relevant for the therapeutic dose range in humans

Pharmaceutical particulars

List of excipients

Water for injections
Glucose monohydrate
Hydrochloric acid

Incompatibilities

Glyceryl Trinitrate is not compatible with polyvinylchloride (PVC) and severe losses of glyceryl trinitrate (up to 50%) may occur if polyvinylchloride is used, resulting in a reduction of delivered dose and efficacy. Contact of the solution with polyvinylchloride bags should be avoided. The product is compatible with glass infusion sets and with rigid infusion packs made of polyethylene; it may also be infused slowly using a syringe pump with a glass or plastic syringe.

Shelf life

Unopened ampoules: 3 years
Unopened vials: 2 years
Opened ampoules or vials:
The product should be used immediately after opening the container.
Any unused solution from opened containers should be discarded.
Prepared infusion solutions:
Chemical and physical in-use stability has been demonstrated in glucose solution 5 % and sodium chloride solution 0.9 % for 24 hours at room temperature.
From a microbiological point of view, the product should be used immediately. If not used immediately, in-use storage times and conditions prior to use are the responsibility of the user and would normally not be longer than 24 hours at 2°C to 8°C, unless dilution has taken place in controlled and validated aseptic conditions.

Special precautions for storage

Keep the container in the outer carton.
Do not store above 25°C.

Nature and contents of container

5 ml, 10 ml or 25 ml ampoules, made of colourless glass, type I (Ph. Eur.).
50 ml vial, made of colourless glass, type I (Ph. Eur.), bromobutyl rubber stopper.
Box of 10 ampoules with 5 ml
Box of 10 ampoules with 10 ml
Box of 10 ampoules with 25 ml
Box of 1 vial with 50 ml
Box of 10 vials with 50 ml
Box of 25 vials with 50 ml
Not all pack sizes may be marketed.

Special precautions for disposal and other handling

Glyceryl Trinitrate need not be diluted before use but can be diluted by 1:10 up to 1:40 with 5 % glucose solution, 5 % glucose solution and 0.9 % sodium chloride solution, or with 0.9 % sodium chloride solution.
The solution, whether or not diluted, should be infused slowly and not given by bolus injection. To ensure a constant infusion rate of glyceryl trinitrate it is recommended that Glyceryl Trinitrate be administered by means of a syringe pump or polyethylene infusion bag with a counter, or with a glass or rigid polyethylene syringe and polyethylene tubing.
Systems made of polyvinyl chloride (PVC) may absorb up to 50% of the glyceryl trinitrate from the solution.
Vials of 50 ml Glyceryl Trinitrate are for single use only and should not be regarded as multi-dose containers.

Manufactured by:

Kwality Pharmaceuticals Ltd.

Nag Kalan, Majitha Road,
Amritsar - 143 601, INDIA

Component : Carton
Dimension : 29 x 29 x 59mm
Colour : CMYK
GSM : 320 gsm ITC Cyber/Pearl XL
Varnish / coating: U.V. coating

10 ml (3.0 fl.oz.) NITROGLYCERIN INJECTION USP	10 ml (3.0 fl.oz.) NITROGLYCERIN INJECTION USP	Each 100 contains: Nitro-Glycerin USP 1 mg Sodium Chloride USP 9.0 mg Water for Injection USP q.s. 10 ml (3.0 fl.oz.) NITROGLYCERIN INJECTION USP	Each 100 contains: Nitro-Glycerin USP 1 mg Sodium Chloride USP 9.0 mg Water for Injection USP q.s. 10 ml (3.0 fl.oz.) NITROGLYCERIN INJECTION USP	Mfg. No. 1564-S Batch No. Mfg. Date 12/20/20 Exp. Date 12/20/25 	10 ml (3.0 fl.oz.) NITROGLYCERIN INJECTION USP	Each 100 contains: Nitro-Glycerin USP 1 mg Sodium Chloride USP 9.0 mg Water for Injection USP q.s. 10 ml (3.0 fl.oz.) NITROGLYCERIN INJECTION USP	Each 100 contains: Nitro-Glycerin USP 1 mg Sodium Chloride USP 9.0 mg Water for Injection USP q.s. 10 ml (3.0 fl.oz.) NITROGLYCERIN INJECTION USP	Manufactured by Hospira, Inc. Hospira, Inc. 1000 N. 17th St. Moline, IL 61201-1000	10 ml (3.0 fl.oz.) NITROGLYCERIN INJECTION USP	Each 100 contains: Nitro-Glycerin USP 1 mg Sodium Chloride USP 9.0 mg Water for Injection USP q.s. 10 ml (3.0 fl.oz.) NITROGLYCERIN INJECTION USP	Each 100 contains: Nitro-Glycerin USP 1 mg Sodium Chloride USP 9.0 mg Water for Injection USP q.s. 10 ml (3.0 fl.oz.) NITROGLYCERIN INJECTION USP	Manufactured by Hospira, Inc. Hospira, Inc. 1000 N. 17th St. Moline, IL 61201-1000	10 ml (3.0 fl.oz.) NITROGLYCERIN INJECTION USP	Each 100 contains: Nitro-Glycerin USP 1 mg Sodium Chloride USP 9.0 mg Water for Injection USP q.s. 10 ml (3.0 fl.oz.) NITROGLYCERIN INJECTION USP	Each 100 contains: Nitro-Glycerin USP 1 mg Sodium Chloride USP 9.0 mg Water for Injection USP q.s. 10 ml (3.0 fl.oz.) NITROGLYCERIN INJECTION USP
--	--	--	--	--	--	--	--	---	--	--	--	---	--	--	--

Print dot matrix printer 'JPD/JMOH' - 15000 boxes

NITROGLYCERIN INJECTION USP 10 mg/10ml (1 mg/ml)	NITROGLYCERIN INJECTION USP 10 mg/10ml (1 mg/ml)	Each of contains: Nitrate Monoglycerin USP 1 mg Water for Injection USP q.s. Dosage: As directed by the Physician Store below temperature 25°C to 30°C (Protect from light) Do not use the Injection if: It is old date. Keep out of reach of the children.	Each of contains: Nitrate Monoglycerin USP 1 mg Water for Injection USP q.s. Dosage: As directed by the Physician Store below temperature 25°C to 30°C (Protect from light) Do not use the Injection if: It is old date. Keep out of reach of the children.	Each of contains 1000 tablets and For 10 days. 10 ml 	Each of contains 1000 tablets and For 10 days. 10 ml 	Carton Size - 29 x 29 x 59 mm	Mfg. No. 1984-B Batch No. Mfg. Date: 03/2020 Exp. Date: 03/2025 	Mfg. No. 1984-B Batch No. Mfg. Date: 03/2020 Exp. Date: 03/2025	Mfg. No. 1984-B Batch No. Mfg. Date: 03/2020 Exp. Date: 03/2025	Mfg. No. 1984-B Batch No. Mfg. Date: 03/2020 Exp. Date: 03/2025
--	--	---	---	--	--	--------------------------------------	--	--	--	--

Print dot matrix printer 'JPD/PHH' - 16500 boxes

[illegible]

Print dot matrix printer 'JPD/JUH' - 3700 boxes

NITROGLYCERIN INJECTION USP 10 mg/10ml (1 mg/ml)	10 ml	Do not use unless ordered and for IV use.	10 ml	Keep 10 of the 100 ml for IV dilution.
NITROGLYCERIN INJECTION USP 10 mg/10ml (1 mg/ml)	10 ml	Do not use unless ordered and for IV use.	10 ml	Keep 10 of the 100 ml for IV dilution.
NITROGLYCERIN INJECTION USP 10 mg/10ml (1 mg/ml)	10 ml	Do not use unless ordered and for IV use.	10 ml	Keep 10 of the 100 ml for IV dilution.
NITROGLYCERIN INJECTION USP 10 mg/10ml (1 mg/ml)	10 ml	Do not use unless ordered and for IV use.	10 ml	Keep 10 of the 100 ml for IV dilution.
NITROGLYCERIN INJECTION USP 10 mg/10ml (1 mg/ml)	10 ml	Do not use unless ordered and for IV use.	10 ml	Keep 10 of the 100 ml for IV dilution.
NITROGLYCERIN INJECTION USP 10 mg/10ml (1 mg/ml)	10 ml	Do not use unless ordered and for IV use.	10 ml	Keep 10 of the 100 ml for IV dilution.

Print dot matrix printer 'JPD/KAUH' - 4800 boxes

Check List for Labeling						Formulation No.	
Work Order No.	Version	Pharmcos	Signt	Cosmet Signat	Mfg Signt	APC/Plant Code	Map Name
88591	English						150602
Matching all source store Matching all source brand Matching all source name							
Matching parameter with label of reader brand							
Previous specification sheet			Designed by : Hareend Singh		Order Quantity		
Checked by :			Authorized by :		Packing		
Production change			M/D.				



Component : Label
Dimension : 65 x 25mm
Colour : CMYK
GSM : 60 gsm chromo art sticker paper
Varnish / coating: U.V. coating

Label Size:- 65 x 25 mm

Each ml contains: Diluted Nitroglycerin USP eq. to Nitroglycerin 1 mg Water for Injection USP q.s. Dosage: As directed by the Physician. Store between temperature 20°C to 25°C. Protect from light. Do not use the injection if it is not clear. Keep out of the reach of the children.	NITROGLYCERIN INJECTION USP 10 mg/10ml (1mg/ml) TO BE DILUTED BEFORE USE For IV use 10 ml	Mfg. Lic. No.: 1804-B Batch No. : Mfg. Date : Exp. Date : Manufactured by: Kwaliti Pharmaceuticals Ltd. Nag Kalan, Majitha Road, Amritsar - 143 601, INDIA
---	---	---

Expiry Date is 36 months from the Mfg. Date. For eg. 10/2019 to 09/2022

Check List for Labeling												Formulation No.:		
Work Order No. :	Version	Pharmacop.	Spell.	Compo.	Batch, Mfg. Exp.	Expiry as per Schedule 'P'	M.R.P	Mfg. Lic.No./ Nutral Code	Packing	Category	Mfg. Name	Reg. No.	Check Order for strength, Volume & Packing	STORAGE
8859/1	English													
Matching all parameters between Box and Label														
Matching the parameter with label of leader brand														
Previous specimen artwork : REPEAT				Designed by : Harpreet Singh				Order Quantity		Party Name		Packing		
Checked by :		Approved by :		Authorized by:		Party Approval		40000 Vials		Al Rahma				
Production Incharge		QC Incharge		Q.A.		M.D.		Card Board used for carton :						
								☐ G/B ☐ W/B ☐ I.T.C. ☐ Pearl						