VERDYE PRESCRIBING INFORMATION

Name of the Medicinal Product
Verdye 5 mg/ml Injection
25 mg / 50 mg, Powder for Solution for Injection

Pharmaceutical Form
Powder for Solution for Injection
Dark-green powder

Clinical Particulars
Therapeutic indications
This medicinal product is for diagnostic use only.

Diagnostic Indications

Cardiac, circulatory and micro-circulatory diagnostics:
- measurement of cardiac output and stroke volume
- measurement of circulating blood volumes
- measurement of cerebral perfusion

Liver function diagnostics:
- measurement of liver blood flow
- measurement of excretory function of the liver

Ophthalmic angiography diagnostics:
- measurement of perfusion of the choroid

Posology and method of administration

Method of administration
Before administration the powder must be reconstituted with water for injection.

Shelf Life
5 years. After reconstitution, the solution should be used immediately, protected from light.

Instructions for use and handling
This medicinal product should be reconstituted immediately prior to use. This medicinal product is reconstituted by addition of 5 ml water for injections to the vial containing 25 mg of active substance or 10 ml water for injections to the vial con-taining 50 mg of active substance, respectively, giving in both cases a dark-green solution for injection with a concentration of 5 mg/ml (0.5 % w/v). If an incompatibility is noted in the form of unclear solution then the reconstituted solution should be discarded. Visually inspect the reconstituted solution. Only use clear solutions free from visible particles.
This medicinal product is for single use only.

The reconstituted solution is clear and free from visible particles.

Diagnostic procedures with Verdye should be performed under the supervision of a physician. Verdye is intended for intravenous injection via an injection needle, a central or peripheral catheter or cardiac catheter.

The administration and site of Verdye are of critical importance for the quality of the measurements. In principle, for obtaining optimal quality first pass indicator dilution curves, the injection should be as close as possible to the vascular bed, organ or tissue of interest.

On peripheral injection the injection should be made immediately after application of tourniquet and the arm should be raised after release of tourniquet. This ensures rapid transport of the dye from the site of injection and peripheral injection is then practically equivalent to central venous injection.

Dosage
Single dose per measurement in adults, elderly, children:
Cardiac, circulatory, micro-circulatory and tissue perfusion **diagnostics** as well as **cerebral blood flow**: 0.1 to 0.3 mg/kg body weight as bolus injection
Liver function diagnostics: 0.25 – 0.5 mg/kg body weight as bolus injection
Ophthalmic angiography: 0.1 to 0.3 mg/kg body weight as bolus injection
Total daily dose:
Adults, elderly, adolescents 11-18 years:
The total daily dose of Verdye should be kept below 5 mg/kg body weight.
Children 2 – 11 years:
The total daily dose should be kept below 2.5 mg/kg body weight.
Children 0 - 2 years:
The total daily dose should be kept below 1.25 mg/kg body weight.

Contraindications
Verdye is contraindicated for safety reasons in:
- patients with hypersensitivity to indocyanine green or to sodium iodide unless special precautions are taken,
- patients with hypersensitivity to iodine,
- patients with hyper-thyroidism, patients with autonomic thyroid adenomas
- as in-vitro experiments have shown that indocyanine green displaces bilirubin from its protein binding, Verdye should not be used in premature infants or neonates in whom an exchange transfusion is indicated due to of hyper-bilirubinemia,
- if injection of Verdye was poorly tolerated in the past it must not be used again, since severe anaphylactic reactions might occur.

For full prescribing information go to www.diagnosticgreen.com

REFERENCES

[1]*Amoaku WM, Chakravarthy U, Gale R, Gavin M, Ghanchi F, Gibson J et al. Defining response to anti VEGF therapies in neovascular AMD. Eye (London) 2015.*

[2]*Ophthalmic Services Guidance Ophthalmic Imaging, November 2016, The Royal College of Ophthalmologists 2016.*

[3]*Ravera V, et al.. RETINAL ANGIOMATOUS PROLIFERATION DIAGNOSIS: A Multiimaging Approach. Retina. 2016;36(12):2274–2281.*

Diagnostic Green

info@diagnosticgreen.com
www.diagnosticgreen.com

Diagnostic Green GmbH
Otto-Hahn-Straße 20
85609 Aschheim-Dornach
Germany

Diagnostic Green LLC
38955 Hills Tech Drive
Farmington Hills
MI 48331, United States

Diagnostic Green

Verdye (Indocyanine Green)
Ophthalmology Focus

www.diagnosticgreen.com

Diagnostic Green is the leading provider of trusted high quality fluorescence products for physicians worldwide.

Indocyanine Green Angiography (ICGA) is the gold standard in diagnosing a number of serious eye conditions and is a key diagnostic tool used by ophthamology specialists worldwide. ICGA is particularly useful in the differential diagnosis of Polypoidal Choroidal Vasculopathy (PCV), Central Serous Chorioretinopathy (CSCR), and Retinal Angiomatous Proliferation (RAP), which can be misdiagnosed as nAMD (Neovascular Age-related Macular Degeneration)[1].

VERDYE (INDOCYANINE GREEN):

Verdye (Indocyanine Green (ICG)) is a tricarbocyanine dye with both hydrophilic and lipophilic properties.

The retention of ICG in the fenestrated choroidal circulation, combined with its low permeability, makes ICG angiography ideal for viewing the choroidal blood vessels. Once injected, Verdye binds to plasma proteins and quickly circulates to the choroid layer, delineating the choroidal veins within 15-20 secs.

Verdye is cleared exclusively through the liver and then excreted through the bile. It does not undergo metabolism. Verdye has an excellent safety profile and adverse reactions occur very rarely (<1/10,000). Using ICGA at initial presentation helps identify disorders of the choroidal circulation, allowing differential treatment approaches that may improve outcomes and safety for patients.

VERDYE IS COMMONLY USED FOR:

- Investigation of complex posterior uveitis and white dot syndromes
- Assessment of patients with "wet" AMD where the presence of polypoidal choroidal vasculopathy (PCV) is in question
- The assessment of choroidal hyperpermeability in patients with central serous chorioretinopathy

"ICG imaging is an essential requirement for specialised retinal clinics at tertiary referral hospital eye services"

THE ROYAL COLLEGE OF OPHTHALMOLOGISTS[2]

INDICATIONS FOR ICG ANGIOGRAPHY INCLUDE:

- Choroidal Neovascularisation (CNV)
- Pigment Epithelial Detachment
- Polypoidal Choroidal Vasculopathy
- Retinal Angiomatous Proliferation (RAP)
- Central Serous Chorioretinopathy (CSCR)
- Intraocular Tumours
- Choroidal Inflammatory Conditions

ICGA VERSUS OCTA:

ICGA and OCTA (Optical Coherence Tomographic Angiography) are useful tools when diagnosing a number of serious eye conditions. Below are some of the advantages of ICGA and limitations associated with OCTA including the determination of accurate visualisation of neovascularisation.

ICGA	OCTA
ICGA fluorescence can penetrate blood, fluid and retinal pigment epithelium to reveal underlying abnormalities of the inner choroidal vasculature and is essential for making a definitive diagnosis of PCV.	Extremely motion sensitive, requiring a patient to fixate on precise point for several seconds. Patient compliance required, which is often difficult, particularly for older patients.
Excellent visualisation within minutes, of the medium & large choroidal vessels.	OCTA takes more time than structural scans and requires trade-offs in flow resolution, scan quality and speed.
ICGA is beneficial in the differential diagnosis of PCV, Chronic CSC, and RAP.	Limited field of view leading to a greater likelihood that lesions may be missed.
ICGA has been shown to optimise detection of capillary macro aneurysms in longstanding diabetic macular edema (DME) or retinal vein occlusion (RVO).	Failure to recognise OCTA Projection Artifact (blood vessels seem at erroneous location), may lead to inaccurate clinical assessment.
A recent study demonstrated that late leakage in ICGA occurred in all RAP cases[3].	Image processing for OCTA can alter blood vessel appearance through segmentation defects, and image display software can lead to false impressions of vessel location and density.
Duration of ICGA procedure only 15-20mins, very quick analysis.	The analysis of these images is time-consuming - may involve many hours of post hoc manual segmentation work, which may be difficult to accommodate during daily medical work routines.