Proposed professional information for PREGABALIN BIOTECH

SCHEDULING STATUS

S5

1. NAME OF THE MEDICINE

PREGABALIN 25 BIOTECH hard capsules

PREGABALIN 75 BIOTECH hard capsules

PREGABALIN 150 BIOTECH hard capsules

2. QUALITATIVE AND QUANTITATIVE COMPOSITION

PREGABALIN 25 BIOTECH: Each hard capsule contains 25 mg pregabalin.

PREGABALIN 75 BIOTECH: Each hard capsule contains 75 mg pregabalin.

PREGABALIN 150 BIOTECH: Each hard capsule contains 150 mg pregabalin.

Sugar free.

For the full list of excipients, see section 6.1.

3. PHARMACEUTICAL FORM

Capsules, hard.

PREGABALIN 25 BIOTECH: Opaque white/ opaque white, size ‘4’, hard gelatine capsules, radially imprinted with ‘PG’ on cap and ‘25’ on body with black ink, filled with white to off -white powder.

PREGABALIN 75 BIOTECH: Opaque white/ orange opaque, size ‘4’, hard gelatine capsules, radially imprinted with ‘PG’ on cap and ‘75’ on body with black ink, filled with white to off -white powder.

PREGABALIN 150 BIOTECH: Opaque white/ opaque white, Size ‘2’, hard gelatine capsules, radially imprinted with ‘PG’ on cap and ‘150’ on body with black ink, filled with white to off -white powder.

4. CLINICAL PARTICULARS

4.1 Therapeutic indications

Neuropathic pain

PREGABALIN BIOTECH capsules are indicated for the treatment of adult patients with neuropathic pain due to Herpes zoster infections and diabetes.

4.2 Posology and method of administration

Posology

The recommended starting dose for PREGABALIN BIOTECH is 75 mg twice daily (150 mg/day), with or without food. Based on individual patient response and tolerability, the dose may be increased to 150 mg twice daily after an interval of 3 to 7 days. In accordance with current clinical practice, if PREGABALIN BIOTECH has to be discontinued, it is recommended this should be done gradually over a minimum of 1 week.

Special populations

Patients with renal impairment:

PREGABALIN BIOTECH is eliminated from the systemic circulation primarily by renal excretion as unchanged pregabalin. As PREGABALIN BIOTECH clearance is directly proportional to creatinine clearance (see section 5.2), dosage reduction in patients with compromised renal function must be individualised according to creatinine clearance (CL_{cr}), as indicated in Table 1 determined using the following formula:

$$CL_{cr}(ml/min) = \left[\frac{1.23 \times [140 - age\,(years)] \times weight\,(kg)}{serum\ creatinine\ (\mu mol/l)}\right] (\times\ 0.85\ for\ female\ patients)$$

Table 1: PREGABALIN BIOTECH dosage adjustment based on renal function [1]		
Creatinine clearance (CL_{cr}) (mL/min)	**Total PREGABALIN BIOTECH daily dose***	**Dose regimen**

	Starting dose (mg/day)	**Maximum dose (mg/day)**	
≥ 60	150	300	BD
30 - 60	75	150	OD or BD
15 - 30	25 - 50	75	OD or BD
< 15	25	25 - 50	OD
Supplementary dosage following haemodialysis (mg)			
	25	50	Single dose'

BD = Two divided doses

OD = Once daily

* Total daily dose (mg/day) should be divided as indicated by dose regimen to provide mg/dose

' Supplementary dose is a single additional dose

PREGABALIN BIOTECH is removed effectively from plasma by haemodialysis (50 % of medicine in 4 hours). For patients receiving haemodialysis, the PREGABALIN BIOTECH daily dose should be adjusted based on renal function. In addition to the daily dose, a supplementary dose should be given immediately following every 4-hour haemodialysis treatment (see Table 1).

Use in patients with hepatic impairment:

No dosage adjustment is required for patients with hepatic impairment (see section 5.2).

Paediatric patients:

The safety and effectiveness of PREGABALIN BIOTECH in patients below the age of 18 years with neuropathic pain has not been established.

Use in the elderly (over 65 years of age):

No dosage adjustment is necessary for elderly patients unless their renal function is compromised, see Table 1.

Method of administration

PREGABALIN BIOTECH is given orally with or without food.

4.3 Contraindications

Known hypersensitivity to pregabalin or to any of the excipients of PREGABALIN BIOTECH (see section 6.1).

4.4 Special warnings and precautions for use

Diabetic patients

Diabetic patients who gain weight on PREGABALIN BIOTECH treatment may need to adjust hypoglycaemic medicines.

Hypersensitivity reactions

PREGABALIN BIOTECH should be discontinued immediately if symptoms of angioedema, such as facial, perioral, or upper airway swelling occur.

Dizziness, somnolence, loss of consciousness, confusion and mental impairment

PREGABALIN BIOTECH treatment has been associated with dizziness and somnolence, which could increase the occurrence of accidental injury (fall) in the elderly population. There have been reports of loss of consciousness, confusion and mental impairment. Patients should be advised to exercise caution until they are familiar with the potential effects of PREGABALIN BIOTECH**.**

Vision-related effects

Visual adverse reactions have been reported, including loss of vision, visual blurring or other changes of visual acuity, many of which were transient. Discontinuation of PREGABALIN BIOTECH may result in resolution or improvement of these visual symptoms.

Renal failure

Renal failure has been reported and discontinuation of pregabalin, as in PREGABALIN BIOTECH, did show reversibility of this adverse reaction.

Withdrawal symptoms

After discontinuation of short-term and long-term treatment with pregabalin, as in PREGABALIN BIOTECH, withdrawal symptoms have been observed. The following events have been mentioned: insomnia, headache, nausea, anxiety, diarrhoea, flu syndrome, nervousness, depression, pain, convulsion, hyperhidrosis and dizziness, suggestive of physical dependence. The patient should be informed about this at the start of the treatment.

Convulsions, including status epilepticus and grand mal convulsions, may occur during PREGABALIN BIOTECH use or shortly after discontinuing.

Discontinuation of long-term treatment of pregabalin, as in PREGABALIN BIOTECH, data suggest that the incidence and severity of withdrawal symptoms may be dose related.

Congestive heart failure

Congestive heart failure has been reported. These reactions are mostly seen in elderly cardiovascular compromised patients during pregabalin treatment for a neuropathic indication. PREGABALIN BIOTECH should be used with caution in these patients. Discontinuation of PREGABALIN BIOTECH may resolve the reaction.

Respiratory depression

There have been reports of severe respiratory depression in relation to pregabalin use, as in PREGABALIN BIOTECH. Patients with compromised respiratory function, respiratory or neurological disease, renal impairment, concomitant use of CNS depressants (including opioids) and the elderly may be at higher risk of experiencing this severe adverse reaction. Dose adjustments may be necessary in these patients (see section 4.2)

Suicidal ideation and behaviour

Suicidal ideation and behaviour have been reported in patients treated with gabapentinoids such as pregabalin in PREGABALIN BIOTECH in several indications. Therefore, patients should be monitored for signs of suicidal ideation and behaviours and appropriate treatment should be considered. Patients and caregivers should be advised to seek medical advice should signs of suicidal ideation or behaviour emerge.

Reduced lower gastrointestinal tract function

Reduced lower gastrointestinal tract function (e.g. intestinal obstruction, paralytic ileus, constipation) has been reported when pregabalin was co-administered with medicines that have the potential to produce constipation, such as opioid analgesics. When PREGABALIN BIOTECH and opioids are used in combination, measures to prevent constipation should be considered (especially in female patients and the elderly).

Concomitant use with opioids

Caution is advised when prescribing pregabalin concomitantly with opioids due to risk of CNS depression (see section 4.5).

In a case control study of opioid users, those patients who took pregabalin concomitantly with an opioid had an increased risk for opioid-related death compared to opioid use alone. This increased risk was observed at low doses of pregabalin (≤ 300 mg) and there was a trend for a greater risk at high doses of pregabalin (> 300 mg).

Misuse, abuse potential or dependence

Cases of misuse, abuse and dependence have been reported. Caution should be exercised in patients with a history of substance abuse and the patient should be monitored for symptoms of PREGABALIN BIOTECH misuse, abuse or dependence (development of tolerance, dose escalation, intentional overdose, drug-seeking behaviour have been reported).

Encephalopathy

Encephalopathy has been reported, mostly in patients with underlying conditions that may precipitate encephalopathy.

4.5 Interaction with other medicines and other forms of interaction

Since pregabalin is predominantly excreted unchanged in the urine, undergoes negligible metabolism in humans (< 2 % of a dose recovered in urine as metabolites), does not inhibit medicine metabolism *in vitro*, and is not bound to plasma proteins, PREGABALIN BIOTECH is unlikely to produce, or be subject to, pharmacokinetic interactions.

In vivo studies and population pharmacokinetic analysis

Accordingly, in *in vivo* studies no clinically relevant pharmacokinetic interactions were observed between PREGABALIN BIOTECH and phenytoin, carbamazepine, valproic acid, lamotrigine, gabapentin, lorazepam, oxycodone or ethanol. In addition, population pharmacokinetic analysis indicated that the three commonly used medicine classes, oral antidiabetics, diuretics and insulin, and the commonly used anti-epileptic medicines, phenytoin, carbamazepine, valproic acid, lamotrigine, phenobarbitone, tiagabine and topiramate had no clinically significant effect on pregabalin clearance.

Similarly, these analyses indicated that PREGABALIN BIOTECH had no clinically significant effect on the clearance of phenytoin, carbamazepine, valproic acid, lamotrigine, topiramate and phenobarbitone.

Oral contraceptives, norethisterone and/or ethinyl oestradiol

Co-administration of PREGABALIN BIOTECH with the oral contraceptives norethisterone and/ or ethinyl oestradiol does not influence the steady-state pharmacokinetics of either medicine.

Central nervous system influencing medicines

Multiple oral doses of PREGABALIN BIOTECH co-administered with oxycodone, lorazepam, or ethanol did not result in clinically important effects on respiration. PREGABALIN BIOTECH appears

to be additive in the impairment of cognitive and gross motor function caused by oxycodone. PREGABALIN BIOTECH may potentiate the effects of ethanol and lorazepam.

In the post marketing experience, there are reports of respiratory failure and coma in patients taking PREGABALIN BIOTECH and other CNS depressant medications.

Interactions and the elderly

No specific pharmacodynamic interaction studies were conducted in elderly volunteers. Interaction studies have only been performed in adults.

4.6 Fertility, pregnancy and lactation

Women of childbearing potential/ contraception in males and females

As potential risk for humans is unknown, effective contraception must be used in women of child-bearing potential.

Pregnancy

There are no adequate data on the use of PREGABALIN BIOTECH in pregnant women.

Studies in animals have shown reproductive toxicity. The potential risk for humans is unknown. Therefore, PREGABALIN BIOTECH should not be used during pregnancy.

Breastfeeding

Pregabalin is excreted into human milk (see section 5.2). The effect of pregabalin on new-borns/ infants is unknown. Therefore, breastfeeding is not recommended during treatment with PREGABALIN BIOTECH.

Fertility

There are no clinical data on the effects of pregabalin on female fertility. A fertility study in female rats has shown adverse reproductive effects. Fertility studies in male rats have shown adverse reproductive and development effects.

4.7 Effects on ability to drive and use machines

PREGABALIN BIOTECH frequently causes dizziness and somnolence. Head and body injuries and road traffic incidents have also been reported with pregabalin, as contained in PREGABALIN BIOTECH. Therefore, patients are advised not to drive, operate complex machinery or engage in other potentially hazardous activities until it is known whether this medicine affects their ability to perform these activities.

4.8 Undesirable effects

a) Summary of adverse effects

The most frequently reported adverse reactions were dizziness and somnolence. The most frequent adverse reactions resulting in discontinuation from pregabalin treatment are dizziness and somnolence.

In the table below the adverse reactions are listed by system organ class and frequency. Within each frequency grouping, undesirable effects are presented in order of decreasing seriousness.

Additional reactions reported from post marketing experience are also included and listed according to frequency.

b) Tabulated summary of adverse reactions

MedDRA system organ class	Frequency	Adverse reactions
Infections and infestations	Frequent	Nasopharyngitis
Blood and the lymphatic system disorders	Less frequent	Neutropenia
Immune system disorders	Less frequent	Hypersensitivity, angioedema, allergic reaction
Metabolism and nutrition disorders	Frequent	Increased appetite
	Less frequent	Anorexia, hypoglycaemia

MedDRA system organ class	Frequency	Adverse reactions
Psychiatric disorders	Frequent	Euphoric mood, confusion, irritability, disorientation, insomnia, decreased libido
	Less frequent	Hallucination, panic attack, restlessness, agitation, depression, depressed mood, elevated mood, aggression, mood swings, depersonalisation, word finding difficulty, abnormal dreams, increased libido, anorgasmia, apathy, disinhibition
	Unknown frequency	Suicidal ideation and behaviour
Nervous system disorders	Frequent	Dizziness, somnolence, headache, ataxia, coordination abnormal, tremor, dysarthria, amnesia, memory impairment, disturbance in attention, paraesthesia, hypoaesthesia, sedation, balance disorder, lethargy
	Less frequent	Syncope, stupor, myoclonus, loss of consciousness, psychomotor hyperactivity, dyskinesia, dizziness postural, intention tremor, nystagmus, cognitive disorder, mental impairment, speech disorder, hyporeflexia, hyperaesthesia, burning sensation, ageusia, malaise, convulsions, parosmia, hypokinesia, dysgraphia
Eye disorders	Frequent	Blurred vision, diplopia
	Less frequent	Peripheral vision loss, visual disturbance, eye swelling, visual field defect, reduced visual acuity, eye pain, asthenopia,

MedDRA system organ class	Frequency	Adverse reactions
		photopsia, dry eye, increased lacrimation, eye irritation, vision loss, keratitis, oscillopsia, altered visual depth perception, mydriasis, strabismus, visual brightness
Ear and labyrinth disorders	Frequent	Vertigo
	Less frequent	Hyperacusis
Cardiac disorders	Less frequent	Tachycardia, first degree atrioventricular block, sinus bradycardia, congestive heart failure, QT prolongation, sinus tachycardia, sinus dysrhythmia
Vascular disorders	Less frequent	Hypotension, hypertension, hot flushes, flushing, peripheral coldness
Respiratory, thoracic and mediastinal disorders	Less frequent	Dyspnoea, epistaxis, cough, nasal congestion, rhinitis, snoring, nasal dryness, pulmonary oedema, throat tightness
	Frequency unknown	Respiratory depression
Gastrointestinal disorders	Frequent	Vomiting, nausea, constipation, diarrhoea, flatulence, abdominal distension, dry mouth
	Less frequent	Gastro-oesophageal reflux disease, salivary hypersecretion, oral hypoaesthesia, ascites, pancreatitis, swollen tongue, dysphagia
Hepatobiliary disorders	Less frequent	Elevated liver enzymes*, jaundice, hepatic failure, hepatitis
Skin and subcutaneous	Less frequent	Papular rash, urticaria, hyperhidrosis,

MedDRA system organ class	Frequency	Adverse reactions
tissue disorders		pruritus, Stevens-Johnson syndrome, cold sweat
Musculoskeletal and connective tissue disorders	Frequent	Muscle cramp, arthralgia, back pain, pain in limb, cervical spasm
	Less frequent	Joint swelling, myalgia, muscle twitching, neck pain, muscle stiffness, rhabdomyolysis
Renal and urinary disorders	Less frequent	Urinary incontinence, dysuria, renal failure, oliguria, urinary retention
Reproductive system and breast disorders	Frequent	Erectile dysfunction
	Less frequent	Sexual dysfunction, delayed ejaculation, dysmenorrhoea, breast pain, amenorrhoea, breast discharge, breast enlargement, gynaecomastia
General disorders and administration site conditions	Frequent	Peripheral oedema, oedema, abnormal gait, fall, feeling drunk, feeling abnormal, fatigue
	Less frequent	Generalised oedema, face oedema, chest tightness, pain, pyrexia, thirst, chills, asthenia
Investigations	Frequent	Increased weight (2)
	Less frequent	Increased blood creatine phosphokinase, increased alanine aminotransferase, increased aspartate aminotransferase, increased blood glucose, decreased platelet count, increased blood creatinine, decreased blood potassium, decreased

MedDRA system organ class	Frequency	Adverse reactions
		weight, decreased white blood cell count

* Alanine aminotransferase increased (ALT) and aspartate aminotransferase increased (AST).

c. Description of selected adverse reactions

After discontinuation of short-term and long-term treatment with pregabalin withdrawal symptoms have been observed in some patients. The following reactions have been mentioned: insomnia, headache, nausea, anxiety, diarrhoea, flu syndrome, convulsions, nervousness, depression, pain, hyperhidrosis and dizziness, suggestive of physical dependence. The patient should be informed about this at the start of the treatment.

Concerning discontinuation of long-term treatment of pregabalin, data suggest that the incidence and severity of withdrawal symptoms may be dose related.

Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of PREGABALIN BIOTECH is important. It allows continued monitoring of the benefit/ risk balance of PREGABALIN BIOTECH. Health care providers are asked to report any suspected adverse reactions via the **"6.04 Adverse Drug Reaction Reporting Form"**, found online under SAHPRA's publications: https://www.sahpra.org.za/Publications/Index/8.

4.9 Overdose

In the post marketing experience, the most commonly reported adverse reactions observed when pregabalin was taken in overdose included affective disorder, somnolence, confusional state, agitation, depression and restlessness. Seizures were also reported. In rare occasions, cases of coma have been reported.

Treatment of pregabalin overdose should include general supportive measures and may include

haemodialysis if necessary (see section 4.2 Table 1).

5. PHARMACOLOGICAL PROPERTIES

5.1 Pharmacodynamic properties

Category and class: A 2.5 Central nervous system depressants – Anticonvulsants: including antiepileptics.

Pharmacotherapeutic group: Anti-epileptics, other anti-epileptics.

ATC code: N03AX16.

The active substance, pregabalin, is a gamma-aminobutyric acid (GABA) analogue ((S)-3-(aminomethyl)-5-methylhexanoic acid).

Pregabalin binds to an auxiliary subunit (α_2-σ protein) of voltage-gated calcium channels in the central nervous system, displacing (3H)-gabapentin.

Two lines of evidence indicate that binding of pregabalin to the α_2-σ site is required for analgesic activity in animal models: (1) Studies with the inactive R-enantiomer and other structural derivatives of pregabalin and (2) Studies of pregabalin in mutant mice with defective binding to the α_2-σ protein. In addition, pregabalin reduces the release of several neurotransmitters, including glutamate, noradrenaline, and substance P. The significance of these effects for the clinical pharmacology of pregabalin is not known.

Pregabalin does not interact with either GABAA or GABAB receptors; it is not converted metabolically into GABA or a GABA agonist; it is not an inhibitor of GABA uptake or degradation. [(1)]

Pregabalin prevents pain-related behaviours in animal models of neuropathic and post-surgical pain, including hyperalgesia and allodynia.

5.2 Pharmacokinetic properties

Pregabalin steady-state pharmacokinetics are similar in healthy volunteers and patients with chronic pain.

Absorption

Pregabalin is absorbed when administered in the fasted state, with peak plasma concentrations occurring within 1 hour following both single and multiple dose administration. Pregabalin oral bioavailability is estimated to be ≥ 90 % and is independent of dose. Following repeated administration, steady state is achieved within 24 to 48 hours. The rate of pregabalin absorption is decreased when given with food resulting in a decrease in C_{max} by approximately 25 – 30 % and a delay in T_{max} to approximately 2,5 hours. However, administration of pregabalin with food has no clinically significant effect on the extent of pregabalin absorption.

Distribution

In pre-clinical studies, pregabalin has been shown to readily cross the blood brain barrier in mice, rats and monkeys. Pregabalin has been shown to cross the placenta in rats and is present in the milk of lactating rats. In humans, the apparent volume of distribution of pregabalin following oral administration is approximately 0,56 L/kg. Pregabalin is not bound to plasma proteins.

Biotransformation

Pregabalin undergoes negligible metabolism in humans. Following a dose of radio-labelled pregabalin, approximately 98 % of the radioactivity recovered in the urine was unchanged pregabalin. The N-methylated derivative of pregabalin, the major metabolite of pregabalin found in urine, accounted for 0,9 % of the dose. In pre-clinical studies, there was no indication of racemisation of pregabalin S-enantiomer to the R-enantiomer.

Elimination

Pregabalin is eliminated unchanged from the systemic circulation primarily by renal excretion.

Pregabalin mean elimination half-life is 6,3 hours. Pregabalin plasma clearance and renal clearance are directly proportional to creatinine clearance (see “Pharmacokinetics in special patient groups –

Renal impairment"). Dosage adjustment in patients with reduced renal function or undergoing haemodialysis is necessary (see section 4.2).

Linearity/ non-linearity

Pregabalin pharmacokinetics are linear over the recommended daily dose range. Inter-subject pharmacokinetic variability for pregabalin is low (< 20 %). Multiple dose pharmacokinetics are predictable from single-dose data.

Special populations

Renal impairment:

Pregabalin clearance is directly proportional to creatinine clearance. In addition, pregabalin is effectively removed from plasma by haemodialysis (following a 4-hour haemodialysis treatment plasma pregabalin concentrations are reduced by approximately 50 %). Because renal elimination is the major elimination pathway, dosage reduction in patients with renal impairment and dosage supplementation following haemodialysis is necessary (see section 4.2).

Elderly (over 65 years of age):

Pregabalin clearance tends to decrease with increasing age. This decrease in pregabalin oral clearance is consistent with decreases in creatinine clearance associated with increasing age. Reduction of pregabalin dose may be required in patients who have age related compromised renal function (see section 4.2).

Gender:

Clinical trials indicate that gender does not have a clinically significant influence on the plasma concentrations of pregabalin.

6. PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Capsule content

Pregelatinised starch

Talcum

Capsule shell

Gelatine

Titanium dioxide (E171)

Printing ink

Black iron oxide (E172)

Potassium hydroxide

Propylene glycol

Shellac.

6.2 Incompatibilities

None known.

6.3 Shelf life

24 months.

6.4 Special precautions for storage

Store at or below 25 °C.

Keep in the outer container until required for use.

6.5 Nature and contents of container

White HDPE round bottles with a child resistant cap or a screw cap, containing 30 or 1 000 capsules

OR a PVC/ aluminium blister strip containing 10 capsules, packed in an outer carton.

Not all packaging types and/ or pack sizes may be marketed at the same time.

6.6 Special precautions for disposal and other handling

No special requirements.

7. HOLDER OF CERTIFICATE OF REGISTRATION

Biotech Laboratories (Pty) Ltd

Ground floor, Block K West, Central Park

400 16th Road, Randjespark

Midrand 1685

8. REGISTRATION NUMBERS

PREGABALIN 25 BIOTECH: 50/2.5/0371

PREGABALIN 75 BIOTECH: 50/2.5/0372

PREGABALIN 150 BIOTECH: 50/2.5/0373

9. DATE OF FIRST AUTHORISATION

08 March 2022

10. DATE OF REVISION OF THE TEXT

06 July 2023