

## SUMMARY OF PRODUCT CHARACTERISTICS

# PerioChip®

2.5 mg dental insert [chlorhexidine digluconate]

### 1. NAME OF THE MEDICINAL PRODUCT

PerioChip 2.5 mg Dental Insert

### 2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Each dental insert contains chlorhexidine digluconate 2.5 mg.

Excipient(s): For a full list of excipients, see Section 6.1.

### 3. PHARMACEUTICAL FORM

Dental insert.

Bullet shaped, orange brown dental insert.

### 4. CLINICAL PARTICULARS

#### 4.1 Therapeutic indications

PerioChip with scaling and root planing is indicated as an adjunctive antimicrobial treatment for moderate to severe chronic periodontal disease in adults with pocketing. PerioChip may be used as part of a periodontal treatment programme.

#### 4.2 Posology and method of administration

##### Dosage

**Adults including the elderly:** Following mechanical debridement, a PerioChip is placed in each of the periodontal pockets to be treated. Retreatment with PerioChip following mechanical plaque removal at 3 month intervals may provide additional benefit if pocket depth remains  $\geq 5$ mm.

The PerioChip biodegrades in the periodontal pocket over about a 7-day period and no return visit to the dental clinic to remove the dental insert is necessary. The patient should be instructed to continue normal oral hygiene procedures. No restrictions on dietary habits are needed.

**Children and adolescents:** PerioChip is not indicated in children and adolescents, since data on safety and efficacy in this age group have not been established.

##### Method of administration

Isolate and dry the periodontal pocket. Open an aluminium blister cavity containing one PerioChip. Pick up the dental insert with a pair of forceps so that the rounded end points away from the forceps. Rapidly insert the dental insert into the pocket to its maximum depth and release. The dental insert can be further manoeuvred into position using the tips of the forceps or a flat plastic instrument. PerioChip insertion into periodontal pockets is rapid. The dental insert's consistency allows placement into the pocket with little discomfort to the patient.

#### 4.3 Contraindications

Hypersensitivity to chlorhexidine digluconate or to any of the excipients listed in section 6.1.

#### 4.4 Special warnings and precautions for use

There have been individual reports of systemic hypersensitivity following placement of PerioChip. Local hypersensitivity reactions such as gingival swelling are common.

Serious and occasionally fatal hypersensitivity reactions (anaphylaxis) have been reported in patients receiving products containing chlorhexidine. These usually occur from within minutes to a few hours of dosing. Patients should therefore be instructed to seek immediate medical attention if they develop allergic symptoms such as skin rash, itch, generalised swelling, breathing difficulties, light headedness, rapid heart rate, upset stomach or diarrhoea after exposure to chlorhexidine.

#### 4.5 Interaction with other medicinal products and other forms of interaction

Chlorhexidine is known to be incompatible with anionic agents which may be present in some toothpastes and with sucrose in the diet. Such interactions do not impact significantly on the efficacy of PerioChip. Treatment remained effective with PerioChip during clinical studies in which patients continued with regular toothbrushing and their normal diet.

Nystatin is known to be antagonistic to the efficacy of chlorhexidine. Concomitant use of medicinal products containing this active substance should be avoided.

#### 4.6 Pregnancy and lactation

##### Pregnancy

In reproduction and fertility studies with chlorhexidine digluconate, no evidence of impaired fertility was observed in rats at doses up to 100 mg/kg/day, and no evidence of harm to the fetus was observed in rats and rabbits at doses up to 300 mg/kg/day and 40 mg/kg/day, respectively.

Since controlled studies in pregnant women have not been conducted, the expected benefits of the medicinal product to the mother should be weighed against possible risks to the fetus.

##### Lactation

Animal studies using rats have shown no evidence of toxic effects to suckling pups when chlorhexidine was administered to dams. The chlorhexidine doses used were greater than 100 times the amount administered to a person treated with twelve PerioChips. It is not documented whether or not chlorhexidine is excreted in human milk, therefore caution should be exercised when administering the medicinal product to nursing women.

#### 4.7 Effects on ability to drive and use machines

Not relevant.

#### 4.8 Undesirable effects

Approximately one third of patients experience adverse reactions, usually transient, during the first few days after chip insertion. These may also be due to the mechanical placement of the dental insert in the periodontal pocket or as a result of the preceding scaling procedure. The most commonly reported are gastrointestinal system disorders: dental, gingival or oral soft tissue reactions or are otherwise described as application site reactions.

Adverse reactions have been ranked under headings of frequency using the following convention: very common ( $\geq 1/10$ ); common ( $\geq 1/100$  to  $< 1/10$ ); uncommon ( $\geq 1/1,000$  to  $< 1/100$ ); frequency not known (cannot be estimated from the available data):

Infections and infestations	Uncommon	Upper respiratory tract infection
Blood and lymphatic system disorders	Uncommon	Lymphadenopathy
Immune disorders	Frequency not known	Hypersensitivity including anaphylactic shock (see sections 4.3 and 4.4)
Nervous system disorders	Uncommon	Dizziness, neuralgia
Gastrointestinal disorders	Very common	Toothache
	Common	Gingival swelling, gingival pain, gingival bleeding
	Uncommon	Gingival hyperplasia, gingival recession, gingival pruritus, mouth ulceration, sensitivity of teeth
Skin disorders	Frequency not known	Allergic skin reactions such as dermatitis, pruritus, erythema, eczema, rash, urticaria, skin irritation, and blisters
General disorders and administration site conditions	Uncommon	Malaise, influenza like illness, pyrexia

The following adverse reactions have been derived from post-marketing reports on PerioChip: systemic hypersensitivity, anaphylactoid reaction, soft tissue necrosis, cellulitis and abscess related to the application site, loss of taste and gingival discoloration.

#### 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](http://www.mhra.gov.uk/yellowcard)

Overdose

No case of overdose has been reported.

## 5. PHARMACOLOGICAL PROPERTIES

### 5.1 Pharmacodynamic properties

**Pharmacotherapeutic group:** Stomatological preparations; Antiinfectives and antiseptics for local oral treatment.

**ATC code:** A01AB03.

### General properties

Chlorhexidine digluconate is an antimicrobial agent active against a wide spectrum of Gram-positive and Gram-negative organisms, yeast, fungi, facultative anaerobes and aerobes. Chlorhexidine is predominately a “membrane-active” agent; it damages the outer membrane in the bacteria.

In an *ex vivo* study of plaque samples, taken from 25 patients with periodontal disease, exposure to escalating doses of chlorhexidine, resulted in elimination of 99% of subgingival bacteria at concentrations of 125 µg/mL or more. The MIC values for various oral cavity micro-organisms to chlorhexidine are tabulated below:

Micro-organisms	MIC (µg/mL)
<i>Porphyromonas gingivalis</i>	62
<i>Prevotella intermedia</i>	62
<i>Campylobacter concisus</i>	31
<i>Capnocytophaga ochracea</i>	250
<i>Hemophilus aphrophilus</i>	8
<i>Streptococcus mutans</i>	8
<i>Actinobacillus actinomycetemcomitans</i>	62
<i>Bacteroides forsythus</i>	125
<i>Bacteroides melaninogenicus</i>	62
<i>Eikenella corrodens</i>	62
<i>Streptococcus intermedia</i>	125
<i>Streptococcus sanguis</i>	125
<i>Veillonella parvule</i>	62
<i>Bacteroides fragilis</i>	250
<i>Capnocytophaga sp.</i>	500

## Other information

Clinical microbiology studies with chlorhexidine mouthrinse have demonstrated the efficacy of chlorhexidine in reducing the numbers of periodontopathic bacteria, with a minimal risk of developing resistance. These studies, demonstrating the use of chlorhexidine for 6 months and up to 2 years, did not result in overgrowth of pathogenic bacteria or changes in the antimicrobial susceptibility of the oral flora.

Chlorhexidine resistance to bacteria usually results from either changes in the bacterial cell membrane, limiting chlorhexidine uptake, or low-level plasmid-encoded resistance.

However, since neither of these mechanisms have been associated with the *Bacteroides sp.*, major pathogens in periodontal pockets, and since the concentrations of chlorhexidine delivered by the PerioChip are relatively high, there is no concern about the development of chlorhexidine resistance following PerioChip administration.

### PerioChip

In a 6-month study of the PerioChip, microbiological examination by DNA probe of bacteria from periodontal pockets, showed a sharp decrease in micro-organisms.

### 5.2 Pharmacokinetic properties

In order to maintain a therapeutically effective concentration, PerioChip delivers a sustained release of chlorhexidine from the gelatin matrix of the dental insert over a period of seven days. This release is most rapid within the first 24 hours after dental insert placement with a peak concentration of about 2000 µg/mL at 2 hours, followed by a slow reduction in the concentration of chlorhexidine over a period of seven days. A microbiologically effective dose of at least 125 µg/mL is maintained during the release period.

There was no evidence of any systemic absorption following dental insert insertion. In addition, low systemic absorption of chlorhexidine has been demonstrated in studies conducted in animals and humans employing high oral doses of chlorhexidine.

### 5.3 Preclinical safety data

PerioChip has been tested for cytotoxicity *in vitro*, for mutagenicity using the mouse micronucleus assay, for oral mucosal irritation potential using a Hamster cheek pouch model and for subchronic oral toxicity in a 30 day ingestion study in rats.

## Cytotoxicity

In Chinese Hamster lung cells (V79), PerioChip showed marked *in vitro* cytotoxicity. The cytotoxicity of the PerioChip was considerably less than that of chlorhexidine digluconate alone and was reduced by the addition of a rat liver-derived, metabolic activation system. Thus, the cytotoxicity of the active, chlorhexidine digluconate, is reduced when incorporated into the PerioChip.

## Mutagenicity

The potential of PerioChip to induce chromosomal or other damage was assessed *in vivo* by evaluating the formation of micronuclei in immature bone marrow erythrocytes in mice. No significant chromosomal or other damage was observed with the PerioChip for any test dose up to and including 1240 mg/kg chlorhexidine digluconate compared to the vehicle control.

## Oral mucosal irritation

The potential of PerioChip to induce irritation was evaluated through surgical insertion into Hamster cheek pouches for either 7 or 14 days. Mucosal irritation was observed after removal of the PerioChips and, through comparison with sites treated with placebo dental inserts, was considered to be caused by the chlorhexidine digluconate. There were few instances of significant differences in erythema and oedema. The effects were transitory and the animals had recovered seven days after dental insert removal, indicating either that the initial localised effects were biologically insignificant or that the healing process was rapid.

## Oral toxicity

Daily dosing for 30 days with up to 37.5 mg/kg of PerioChip powder containing chlorhexidine digluconate caused no adverse reactions in rats.

## **6. PHARMACEUTICAL PARTICULARS**

### **6.1 List of excipients**

Hydrolysed gelatin (cross-linked with glutaraldehyde)  
Glycerol  
Purified water.

### **6.2 Incompatibilities**

Nystatin is known to be antagonistic to the efficacy of chlorhexidine.

### **6.3 Shelf-life**

2.5 years.

### **6.4 Special precautions for storage**

Do not store above 30°C.

### **6.5 Nature and contents of container**

Blister (laminated aluminium foil blister packs), each containing 2, 10 or 20 dental inserts.

### **6.6 Special precautions for disposal**

No special requirements.

## **7. MARKETING AUTHORISATION HOLDER**

Dexcel-Pharma Limited  
7 Sopwith Way, Drayton Fields  
Daventry, Northamptonshire NN11 8PB  
United Kingdom

## **8. MARKETING AUTHORISATION NUMBER**

PL 14017/0035

## **9. DATE OF FIRST AUTHORISATION:**

15 November 1996

## **10. DATE OF LAST RENEWAL:**

14 November 2006

## **11. DATE OF REVISION OF THE TEXT**

11/2014

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