For the use of Registered Medical Practitioner or a Hospital or a Laboratory only.

Sodium Fusidate Cream

Chitomesh-SF™ Cream

चैटोमेष-एस एफ

In a Cream Matrix with **BIOCHITODERM**® PATENTED*

FOR EXTERNAL USE ONLY

COMPOSITION:

Sodium Fusidate I.P. equivalent to Fusidic Acid I.P. 2 % w/w

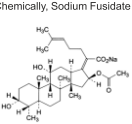
in a cream base containing Biopolymer (Poly-β-(1,4)-2-amino-2-deoxy-D-glucose) qs.

Preservative: Benzoic Acid I.P. 0.2 % w/w

BIOCHITODERM®

PRODUCT DESCRIPTION:

Each gram of **Chitomesh-SF** contains Sodium Fusidate I.P. equivalent to Fusidic Acid 20mg/g (2% w/w), in a cream base containing (**BIOCHITODERM**® Biologically active Polymer), a linear polysaccharide. Sodium Fusidate is sodium (17Z) β-16-acetoxy-3α, 11α-dihydroxyfusida-17(20), 24-dien-21-oate; a white or almost white crystalline powder, slightly hygroscopic, and freely soluble in water and alcohol. Chemically, Sodium Fusidate is $C_{31}H_{47}NaO_6$. It has the following Structural formula:



PHARMACOLOGICAL PROPERTIES:

Chitomesh-SF, an antibiotic derived from Fusidium coccineum, exerts powerful antibacterial activity against a number of gram-positive organisms. Staphylococci, including the strains resistant to penicillin or other antibiotics, are particularly susceptible to **Chitomesh-SF**. The therapeutic efficacy of topically applied **Chitomesh-SF** cream is due partly to the pronounced antibacterial activity of **Chitomesh-SF** cream against the organisms responsible for skin infections and partly to the unique ability of this antibiotic to penetrate intact skin. Fusidic acid exhibits fat and water soluble properties with strong surface activity and shows unusual ability to penetrate the intact skin. However, it is poorly absorbed systemically after topical administration. Concentration of 0.03-0.12 mcg/ml inhibit nearly all strains of staphylococcus aureus.

Pharmacodynamics

Fusidic acid disrupts translocation of peptide subunits and elongating the peptide chain of susceptible bacteria, thus inhibiting protein synthesis. The Chitosan demonstrates blood clotting, film forming, wound healing and skin restoration properties.

Pharmacokinetics

There is no data which define the pharmacokinetics of fusidic acid cream, following topical administration in man. However, In-vitro studies show that fusidic acid can penetrate intact human skin in concentrations well above the MIC-values of susceptible organisms. The degree of exposure depends on factors such as the duration of exposure and the condition of the skin. The major route of elimination of fusidic acid is through the biliary tree and faeces with less than 1 % of the administrated dose excreted in the urine in microbiologicaly active form. Approximately 2 % of the administrated dose is detected as unchanged drug in the faeces. The steroid-like structure of fusidic acid confers certain advantages, such as good skin penetration. Fusidic acid penetrates normal, damaged and avascular skin. Topical administration of fusidic acid results in much higher local concentrations than can be achieved with systemic administration and antimicrobial concentrations of Fusidic acid can be achieved even at deeper layers of the epidermis or dermis.

INDICATIONS:

Chitomesh-SF cream is indicated in skin infections such as:

- Impetigo
- Folliculitis
- Sycosis Barbae
- Paronychia
- Pyoderma
- Infected wounds and Burns
- Boils
- Carbuncles
- Hidradenitis
- Erythrasma
- Acne

Chitomesh-SF is sensitive against Staphylococci, Streptococci, Corynebacterium minutissimum, Propionibacterium acnes and other organisms.

DOSAGE AND ADMINISTRATION:

Apply a thin layer to the affected area 2 -3 times daily generally for a period of 7 days or as directed by the Physician.

DRUG INTERACTIONS:

Chances of drug interaction are remote as negligible amount of drug levels are found in dermis following topical administration of **Chitomesh-SF** cream.

ADVERSE EFFECTS:

Chitomesh-SF cream is remarkably well tolerated and there is an extremely low frequency of hypersensitivity reaction.

STORAGE:

Store at temperatures below 25°C. Do not freeze. Keep out of reach of children.

SHELF LIFE:

36 Months

PRESENTATION:

Chitomesh-SF is available in collapsible aluminium tube internally coated with epoxy based lacquer, with polypropylene cap of 5g, 10g and 30g in an attractive individual carton.

***PATENT GRANTED in INDIA** (302376), **USA** (US 8895542 B2), **JAPAN** (5205549), **EUROPE** (EP2419087), **RUSSIA** (2537023), **PHILIPPINES** (1-2011-500415), **MEXICO** (311959), **ISRAEL** (215641), **CHINA** (1373477), **CANADA** (2795611), **KOREA** (1642537)

SALIENT FEATURES OF Chitomesh-SF

Skin friendly Bio-Polymer **BIOCHITODERM**® in **Chitomesh-SF**

- ☒ Forms a Micro film at wound site and offers skin protection.
- ☒ Facilitates rapid clotting of blood at wound site.
- ☒ Cationic charge immobilizes microbes at wound site.
- ☒ Ensures proven rapid and complete re-epithelialization of skin at wound site.

PRECLINICAL STUDIES

EFFICACY OF TOPICAL ANTIMICROBIALS AGAINST METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS-AN INVITRO STUDY:

An invitro study was done to evaluate the efficacy of the topical antimicrobials mainly using fusidic acid and mupircin against Methicillin resistant Staphylococcus aureus and to assess the activity of the constituent antimicrobial compounds of the cream/ointment based topical products against Methicillin resistant Staphylococcus aureus. Product inhibition assay and agar dilution method on Muller Hinton agar is to identify the zone of inhibition by the antimicrobial against the test strain was noted. ATCC 43300 and four clinical isolates of Methicillin resistant Staphylococcus aureus were the strains used for testing. The results of product inhibition assay and MIC testing show the presence of invitro biological activity of fusidic acid and mupirocin and topical preparations against Methicillin resistant Staphylococcus aureus strains. However, given the current trends regarding the spread and clinical impact of hospital and community acquired MRSA infection it would seem to be wise to maintain all possible treatment options including the potential use of fusidic acid.

IN VITRO ANTIMICROBIAL ZONE OF INHIBITION STUDIES FOR FUSIDIC ACID AGAINST STAPHYLOCOCCUS AUREUS:

The study was conducted to determine the antimicrobial zone of inhibition of fusidic acid and samples against Staphylococcus aureus. ATCC strain 6538 of Staphylococcus aureus was the source procured and further sub cultured every 24 hours and was further confirmed by staining procedures and biochemical test. The agar disc diffusion method and Kirby-Bauer method were performed using the Muller Hinton agar under aseptic conditions where the pure cultures of Staphylococcus aureus were picked up and suspended in 5 ml of sterile Soya bean Casein broth. The turbidity of the inoculum was standardized equivalent of a 0.5 McFarland standard. Based on the size of the zone the sensitivity can be recognized by three categories, in case of sensitive the zone size of the test strain is larger than, equal to or not more than 3 mm smaller than that of the control strain. The zone size of the test strain is smaller than that of the control strain in case of "resistant". For intermediate the zone size of the test strain is at least 2 mm, but also 3 mm smaller than that of the control strain. Based on the zone of inhibition it was concluded that staphylococcus aureus is sensitive towards the given **Chitomesh-SF** sample.

CLINICAL STUDIES

Three independent clinical trials were conducted comparing efficacy of Chitomesh-SF cream (Sodium Fusidate equivalent to Fusidic acid 2 % w/w) with Fusidic acid cream 20 mg/g, Framycetin cream 1 % w/w and Calcium Mupirocin cream 2 % w/w.

A. COMPARISON WITH FUSIDIC ACID CREAM

VAS score data shows that mean visual analogue scale score for **Chitomesh-SF** cream is 1.1 whereas Fusidic Acid cream is 1.5 at visit 3, it clearly indicates that severity of wound is lesser in **Chitomesh-SF** group. Wound contraction score shows that 50 % of the study population achieved 100 % wound contraction with **Chitomesh-SF** cream but only 20 % of the study population achieved 100 % wound contraction with Fusidic Acid cream, within 10 days. Data from wound re-epithelialization proved that 60 % population had rapid re-epithelialization from **Chitomesh-SF** cream group but only 40 % achieved with Fusidic Acid cream at visit 3.

B. COMPARISON WITH FRAMYCETIN CREAM

VAS score data shows 100 % of the study population achieved 100 % better results with **Chitomesh-SF** cream but only 50 % of the study population achieved same results with Framycetin cream at visit 5. Wound contraction score shows that 100 % of the study population achieved 100 % wound contraction with **Chitomesh-SF** cream but only 50 % of the study population achieved 100 % wound contraction with Framycetin cream at visit 5. Data from wound re-epithelialization proved that 100 % population had rapid re-epithelialization from **Chitomesh-SF** cream group but only 50 % achieved with Framycetin cream at visit 5.

C. COMPARISON WITH CALCIUM MUPIROCIN CREAM

VAS score data shows that mean visual analogue scale score for **Chitomesh-SF** cream is 1.1 whereas Calcium Mupirocin cream is 1.6 at visit 5, it clearly indicates that severity of wound is lesser in **Chitomesh-SF** group. Wound contraction score shows that 70 % of the study population achieved 100 % wound contraction with **Chitomesh-SF** cream but only 30 % of the study population achieved 100 % wound contraction with Calcium Mupirocin cream, within 28 days. Data from wound re-epithelialization proved that 60 % population had rapid re-epithelialization from **Chitomesh-SF** cream group but only 30 % achieved with Calcium Mupirocin cream at visit 7.

a) Physician global evaluation score (PGES) shows that 90 % population from **Chitomesh-SF** cream achieved good and excellent results but only 70 % achieved good and excellent results with Fusidic Acid cream at visit 3, 50 % with Framycetin cream at visit 5 and 70 % with Calcium Mupirocin cream at visit 5.

b) Summary statistics of patient's compliance confirmed that 80 % of study population has achieved score zero i.e. absence of signs of itching or indication of pain from the group, that received **Chitomesh-SF** cream, but only 70% of study population achieved with Fusidic Acid cream, 50 % with Framycetin cream and 70 % with Calcium Mupirocin cream.

In the present study, **Chitomesh-SF** significantly reduced the duration of epithelialization and increased the percentage of wound contraction. This was substantiated by an increase in amount of collagen in **Chitomesh-SF** treated group.

apex®

Manufactured in India by:

apex laboratories private limited

B-23, SIDCO Pharmaceutical Complex, Alathur-603110, Tamil Nadu.