Topical Treatments

See Me
Feel Me
Touch Me
Heal Me

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Disclosures

- CEO of Prologel, Inc.
- Research with Myoscience (maybe)
- Licensee of topical medications (maybe)
Ancient Neuroprolotherapy Ointment
Modern Prolotherapy Solutions

- Manufactured products
- Vitamin D-40k units patent 5k-100k
- Prologel-sugar/sugar alcohol blend
- patent pending
Bypassing the Stratum Corneum
Carriers help drugs penetrate the brick(and mortar layer

Once past the stratum corneum, drugs penetrate easily
Iatroleptic technique

Ointment rubbed with friction

Invented in 1790, by Christen of Montipellier

In 1804, he published an iatroleptic method treatise.

Note: Rub in circles, don’t go back and forth.
Skin Penetrators

- Oils, Fats, and Water
- MSM (form of DMSO) and DMSO
- Chemical Penetration Enhancer
Valleix used blisters to bypass the stratum corneum.
Modern skin interruption
Electric callus remover (Ouch)
PROLOGEL INGREDIENTS
Why menthol?

FDA requirements
1. active and inactive from cookbook approve amounts
2. make new drug 1.5 million dollars
Effectiveness of Aloe Vera gel compared with 1% silver sulphadiazine cream as burn wound dressing in second degree burns.

CONCLUSION:
Thermal burns patients dressed with Aloe Vera gel showed advantage compared to those dressed with SSD regarding early wound epithelialization and earlier pain relief.

Shahzad MN, Ahmed N 2013 Feb;63.
Effect of a cetylated fatty acid topical cream on functional mobility and quality of life of patients with osteoarthritis.

CONCLUSION:
Use of a CFA topical cream is an effective treatment for improving knee ROM, ability to ascend/descend stairs, ability to rise from sitting, walk and sit down, and unilateral balance.

*J Rheumatol*. 2004 Apr;31
Kraemer WJ
2 cases Prologel Studies
Musculoskeletal injury

Day 1

Day 2

Day 3
Nerve Pain-1 week after an intravenous stick
15 seconds after topical cream treatment
Mechanical Penetration
help
RECHARGEABLE ULTRASOUND

Look for the base
Who said 1mz penetrates deeper?

Three-MHz Ultrasound Heats Deeper Into the Tissues Than Originally Theorized

Bradley T. Hayes, Mark A. Merrick, and Mitchell L. Cordova
Laser topical medication delivery

~ Ideal for CRPS
~ If laser does not touch skin
LED and topical
Evaluation of dentin permeability after light activated internal dental bleaching.

Carrasco LD, Zanello Guerisoli DM, Pécora JD, Fröner IC.

35% hydrogen peroxide activated by LED -was an increase in dentin permeability.
LED lights pain relief

Effect of light emitting diodes in the photodynamic therapy of rheumatoid arthritis.
Infrared LED showed an effective and cheaper treatment solution for RA.

Neupane J.
3M Microneedle Technology

- Local or systemic delivery for both large and difficult to deliver molecules, including proteins, peptides and vaccines
- Improves delivery efficiency and absorption time of some drugs and vaccines

3M Hollow Microneedle System

Hollow channels allow efficient transdermal delivery of liquid formulations

3M Solid Microneedle System

Transdermal delivery with efficiency that matches or exceeds that provided by injection
Other Topical Applications
History could have helped the 50,000 Civil War amputations
Compression

〜 50 surgeries in Edwin Smith Papyrus

〜 Pictographs display antecubital nerve compression for hand surgery
Marco Aurelio Severino-noted in 1500s snow made surgery site insensitive.

Dominique J. Larre-surgeon general of Napoleon’s army
Noted in 1807, patients felt no pain with amputations at 19 C below zero.
Modern day techniques
〜 Works great for up to 45 seconds
〜 Beware of freezer burns
Modern peripheral nerve freezing received FDA clearance for treatment of peripheral nerve tissue using Focused Cold Therapy for the blocking of pain.

- One of 20 test centers in the USA
- Studying cluneal nerves at 1, 2, 5 weeks
Study for cluneal peripheral nerve cryotherapy
Transcranial direct stimulation combined with injections

To treat the central component as well as the peripheral component

Research: Non-invasive reduced pain in half patients by 50% with 5 20 minute treatments

Especially good for CRPS and post-herpetic neuralgia
Dextrose nasal spray - intubated neonates