

Skin Pharmacology

part 2

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Acne Preparations

- **Retinoic Acid and Derivatives:**

- Retinoic Acid.

- Adapalene.

- Tazarotene.

ريتّا (طالبة جامعية) دارسة أدب وتخرجت حديثًا (طازة)

Acne Preparations

- Retinoic Acid and Derivatives:

علامات ريتنا بالجامعة (A)

- Retinoic Acid(Tretinoin): is the acid form of **Vitamin A**. Stabilizes lysosomes, increases RNA polymerase activity, increases PGE₂, cAMP, and cGMP levels, and increases the incorporation of thymidine into DNA.
- Decreases cohesion between epidermal cells and increases epidermal cell turnover. This will result in expulsion of open comedones and the transformation of closed comedones into open ones.
- Also, promotes dermal collagen synthesis, new blood vessel formation, and thickening of the epidermis, which helps diminish fine lines and wrinkles.
- Can cause erythema and dryness.
- Tumorigenic in animals

Acne Preparations

- Isotretinoin (Accutane):

ACNE PREPARATIONS هاي الجملة لكل أدوية

كانت تروح هي وصاحبته إيزو (الكيوت) بسيارة البنزين منذ الأزل عالجامعة وبالطريق
يوخدوا معهم كليندا وآرثر

- Restricted for severe cystic acne resistant to standard treatment.
- Inhibits sebaceous gland size and function.
- Given orally.
- Toxic: dryness, itching, headache, corneal opacities, pseudotumor cerebri, inflammatory bowel disease, anorexia, alopecia, and muscle and joint pains. Also lipid abnormalities.
- Teratogenicity

Acne Preparations

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وينظفوا السيارة آخر اليوم ويعقموها (sensitizer)

Benzoyl Peroxide:

- Penetrates the stratum corneum or follicular openings and converted to benzoic acid within the epidermis and dermis.
- Has antimicrobial activity against *P. acnes* and peeling and comedolytic effects.
- Can be combined with erythromycin or clindamycin.
- Potent contact sensitizer.
- Can cause bleaching of hair or colored fabrics.

Azelaic Acid:

- Has antimicrobial activity and inhibits conversion of testosterone to dihydrotetosterone.

Drugs for Psoriasis

• أدوية الصدفية بهذه الكلمات الثلاث :

• قاسي (آثاره الجانبية قاسية بمنع تبرع الدم وعدم الحمل ل 3 سنوات)

• طازة

• بوتين

• Acitretin:

- Related to isotretinoin.
- Given orally.
- Hepatotoxic and teratogenic.
- Patients should not become pregnant for 3 years after stopping treatment, and also should not donate blood.

Drugs for Psoriasis

• شاي طازة: حفظ الآثار الجانبية ودورها على هذه الكلمة •



• TEA + ING •

• Tazarotene:

- Topical.
- Anti-inflammatory and Antiproliferative actions.
- Teratogenic. Also, can cause burning, stinging, peeling, erythema, and localized edema of skin.

• Calcipotiene: بوتين

- Synthetic vitamin D₃ derivative



Drugs for Psoriasis

• شخص اسمه إيفه (يعاني من مرضين) (أعطاني قطة) (CAT أول حرف) (أليفة)

• Biologic Agents:

— Alefacept:

- Immunosuppressive dimer fusion protein of CD2 linked to the Fc portion of human IgG₁.

— Efalizumab:

- Recombinant humanized IgG₁ monoclonal antibody.
- Withdrawn :progressive multifocal leukoencephalopathy (PML),
- Can cause thrombocytopenia.

— Etanercept:

- Dimeric fusion protein of TNF receptor linked to the Fc portion of human IgG₁.

Anti-inflammatory Agents

• Topical Corticosteroids:

- Hydrocortisone.
- Prednisolone and Methylprednisolone.
- Dexamethasone and Betamethasone.
- Triamcinolone.
- Fluocinonide.



شخص راح عالمخبز وحكى للخباز:

بدي خبز (Pred) = BREAD) مثل (Methyl) خبز البيت (Bet)

الخباز: عنا ثلاثة أنواع

SONE = ZONE = نفس لفظ كلمة ZONE اذن المنطقة هي المخبز

100

TOPICAL اذن تعطى

الخبز يُصنع من الطحين = FLOUR

Anti-inflammatory Agents

- **Topical Corticosteroids:**

- **Absorption:**

- 1% of hydrocortisone applied to the ventral forearm.
 - 0.14 times of hydrocortisone applied to the plantar foot.
 - 0.83 times of hydrocortisone applied to the palm.
 - 3.5 times of hydrocortisone applied to the scalp.
 - 6 times of hydrocortisone applied to the forehead.
 - 9 times of hydrocortisone applied to the vulvar skin.

Anti-inflammatory Agents

- **Topical Corticosteroids:**
 - **Absorption:**
 - Absorption increased with inflammation.
 - Increasing the concentration does not proportionally increase the absorption.
 - Can be given by intralesional injection.

Anti-inflammatory Agents

- **Topical Cortcosteroids:**
 - **Dermatologic disorders very responsive to steroids:**
 - Atopic dermatitis.
 - Seborrheic dermatitis.
 - Lichen simplex chronicus.
 - Pruritus ani.
 - Allergic contact dermatitis.
 - Eczematous dermatitis.
 - Psoriasis

Anti-inflammatory Agents

- **Topical Cortcosteroids:**

- **Adverse Effects:**

- **Suppression of pituitary-adrenal axis.**
 - **Systemic effects.**
 - **Skin atrophy.**
 - **Erythema.**
 - **Pustules.**
 - **Acne.**
 - **Infections.**
 - **Hypopigmentation.**
 - **Allergic contact dermatitis.**

Anti-inflammatory Agents

- **Topical Cortcosteroids.**
- **Tar compounds:**
 - Mainly for psoriasis, dermatitis, and lichen simplex chronicus
 - Can cause irritant folliculitis, phototoxicity, and allergic contact dermatitis.

Keratolytic and Destructive Agents

• سالي و أخوها وأنت (القارئ) رح تروحوا تحضروا فيلم

• Salicylic acid:

- Solubilizes cell surface proteins resulting in desquamation of keratotic debris.
- Keratolytic in 3-6% concentration, but destructive in higher concentrations.
- Can result in salicylism due to systemic absorption.
- Locally, can cause urticaria, anaphylactic and erythema multiforme reactions, irritation, inflammation, and ulceration.

Keratolytic and Destructive Agents

• Salicylic acid:

• Propylene Glycole: (نفس لفظ كلمة BRO)

• Usually used as a **vehicle** for organic compounds.

- Used alone as a keratolytic agent in concentrations of 40%- 70%, with plastic occlusion, or in gel with 6% salicylic acid.
- Minimally absorbed, oxidized in liver to lactic acid and pyruvic acid.
- Develops an osmotic gradient through the stratum corneum, thereby **increasing hydration** of the outer layers of skin.

الأخ يقوم بتوصيل أخته سالي ويشترى لها المرطبات (عصائر) أثناء الطريق

brother



Keratolytic and Destructive Agents

- Salicylic acid.
- Propylene Glycole.
- Urea: أنت (القارئ)
 - Has a humectant activity, i.e. softening and moisturizing effect on the stratum corneum.
 - Increases water content as a result of its hygroscopic characteristics.
 - Decreases the unpleasant oily feel of dermatologic preparations.
 - When absorbed, it is excreted in urine.

Keratolytic and Destructive Agents



- Salicylic acid.
- Propylene Glycole.
- Urea:
- **Podophyllum Resin and Podofilox**
- **كلمة فيلم (ناقص حرف الميم في الكلمة الثانية + الكلمة الأولى نفس اللفظ تقريبا):**
 - An alcoholic extract of *Podophyllum peltatum*(Mandrake root or May apple).
 - Used in the treatment of condyloma acuminatum and other verrucae.
 - Cytotoxic activity with specific affinity for the microtubule protein of the mitotic spindle.
 - Can cause N, V, muscle weakness, neuropathy, coma, and even death.

Keratolytic and Destructive Agents

- **Salicylic acid.**
- **Propylene Glycole.**
- **Urea:**
- **Podophyllum Resin and Podofilox.**
- **Flurouracil:**
 - Antimetabolite that resembles uracil and inhibits thymidylate synthetase, thus interferes with DNA and may be RNA synthesis.
 - Used in multiple **actinic keratosis.**

Keratolytic and Destructive Agents

- Salicylic acid.
- Propylene Glycole.
- Urea:
- Podophyllum Resin and Podofilox.
- Flurouracil.
- Nonsteroidal Anti-inflammatory Drugs:
 - 3% gel formulation diclofenac.

Keratolytic and Destructive Agents

- Salicylic acid.
- Propylene Glycole.
- Urea:
- Podophyllum Resin and Podofilox.
- Flurouracil.
- Nonsteroidal Anti-inflammatory Drugs.
- Aminolevulinic Acid:
 - Used in **actinic keratosis.**
 - After topical application(20%) and exposure to light, produces a cytotoxic superoxide and hydroxyl radicals.

Antipruritic Agents

- **Doxepine:**
 - Potent H₁ and H₂ receptor antagonist.
 - Can cause drowsiness and anticholinergic effects.
- **Pramoxine:**
 - Is a topical local anesthetic agent.

بالتركي معنى مصاري (para نفس لفظ أول مقطع) ولنعتبر أن العملة هنا دولار (أول حرفين فقط)



Trichogenic and Antitrichogenic Agents

- **Minoxidil (Rogaine):**

- Designed as an antihypertensive agent.
- Effective in reversing the progressive miniaturization of terminal scalp hairs associated with androgenic alopecia.
- Vertex balding is more responsive than frontal balding.

– أدوية تحفيز نمو الشعر :

– مين و فين (بالمصري)؟

Trichogenic and Antitrichogenic Agents

- Minoxidil.
- Finasteride (Propecia):
 - 5 α -reductase inhibitor which blocks the conversion of testosterone to dihydrotestosterone.
 - Oral tablets.
 - Can cause decreased libido, ejaculation disorders, and erectile dysfunction.

Trichogenic and Antitrichogenic Agents

- Minoxidil.
- Finasteride.
- Eflornithine:
 - Is an irreversible inhibitor of **ornithine** decarboxylase, therefore, inhibits polyamine synthesis. Polyamines are important in cell division and hair growth.
 - Effective in reducing facial hair growth in 30% of women when used for 6 months.

Drugs for Leishmania

Caused by three *Leishmania species*:

L. tropica causes: **Cutaneous** leishmaniasis or oriental sore.



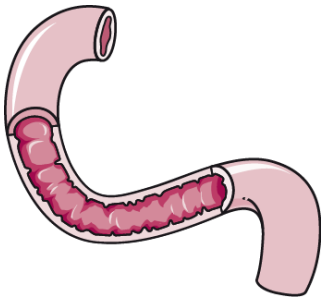
TOPICAL تذكر كلمة

L. braziliensis causes: **Mucocutaneous** leishmaniasis.

قهوة برازيلية == ومن انواع القهوة ايضا هي الموكا (اول 4 أحرف)

L. Donovanii causes: **Visceral** leishmaniasis

كلمة **DUODENUM** وهي من الاعضاء الداخلية (Visceral)



Sodium Stibogluconate

الصوديوم (نعتبره ملح الطعام) يذوب في خمسة أكواب من الماء

Pentavalent antimonial

Binds to SH groups on proteins.

Typical preparations contain 30% to 34% pentavalent antimony by weight as well as *m*-chlorocresol added as a preservative.

Also, inhibits phosphofructokinase

Local, IM or slow IV, irritant.

Given for 20-28 days.

Drug of choice for all forms of leishmaniasis.

Resistance is increasing, especially in India.

Cough, V, D, myalgia, arthralgia, ECG changes, Rash, Pruritus.

Amphotericin

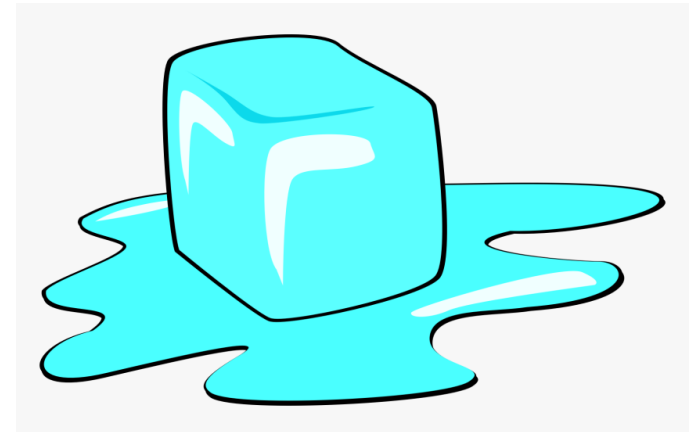
الصوديوم يذوب في خمسة أكواب من الماء (يُعد الماء أمفوتيري)

- Antifungal agent, difficult to use, and toxic.
- Alternative therapy for visceral leishmaniasis, especially in areas with high resistance.

Miltefosine

الصوديوم يذوب (نفس لفظ كلمة MELT) في خمسة أكواب من الماء

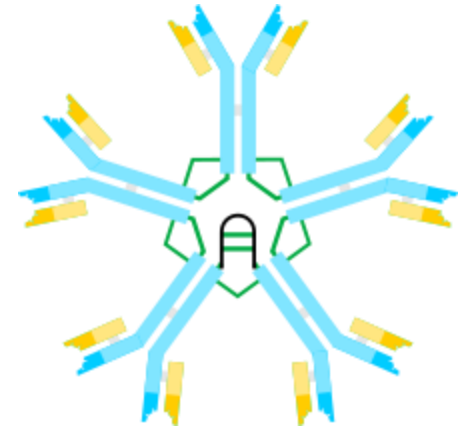
- For visceral leishmaniasis.
- Given orally, for 28 days.
- Causes V & D, hepatotoxicity, nephrotoxicity, and it is teratogenic.



Pentamidine

• الصوديوم يذوب في خمسة أكواب من الماء

- Inhibits DNA replication.
- Also, DHF reductase inhibitor
- Given IM or IV injection and Inhalation
- Binds avidly to tissues, not the CNS.



Pentamidine

Leishmaniasis:

Alternative to Na stibogluconate

Pneumocystis jiroveci:

Treatment and prophylaxis of patients who cannot tolerate or fail other drugs.

Trypanosomiasis:

For early hemolympathic stage.

Pentamidine

- **Adverse Effects:**
- **Rapid Infusion: Hypotension, tachycardia, dizziness.**
- **Pain at the injection site.**
- **Others: Pancreatic, Renal, and Hepatic toxicity.**

Antilepromatous Drugs

• **دبس** الريف كلفني **سلفة** (دين) كبيرة .

• **Dapsone** and **Sulphones**:

- Related to sulphonamides.
- Inhibit folate synthesis.
- Resistance develops.
- Combined with Rifampin and Clofazimine.
- Also used for *Pn. Jeroveci* in AIDS patients.
- Well absorbed and distributed.
- Retained in the skin, muscle, liver and kidney.



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Antilepromatous Drugs

- **Dapsone and Sulphones:**
 - Hemolysis, particularly in G-6-PD deficiency.
 - GIT intolerance
 - Fever, Pruritus, Rashes.
 - Erythema Nodosum Leprosum:
suppressed by steroids or
thalidomide.

Antilepromatous Drugs

دبس الريف كلفني (كُلفة) سُلفة (دَيْن) كبيرة .

- Rifampin:

- Discussed with antituberculous drugs.

- Clofazimine:

- Binds to DNA.
- Stored widely in RES and skin.
- Released slowly from storage sites, $t_{1/2} = 2$ months.
- Given for sulphone- resistant or intolerant cases.
- Causes skin discoloration (red-brown to black) and GIT intolerance.