Drugs used in dermatology

Notes for Pharmacology II practicals

This study material is exclusively for students of general medicine and stomatology in Pharmacology II course. It contains only basic notes of discussed topics, which should be completed with more details and actual information during practical courses to make a complete material for test or exam studies. Which means that without your own notes from the lesson this presentation IS NOT SUFFICIENT for proper preparation for neither tests in practicals nor the final exam.
Effect of drugs administered on skin

- **Systemic** – transdermal application (patches, gels)
  - contraception
  - hormonal substitution therapy
  - opioids

- **Local**
Surface-active drugs

- to treat skin and adnexa diseases
- applied locally
- low specificity of effect
- Different indications
- Effect depends on concentration, drug dosage form and site of administration
Drug groups

1. Adstringents
2. Keratolytics, keratoplastics
3. Epitelizants, granulants
4. Emollients
5. Therapy of acne
6. Draining agents Derivancia
7. Substances against itch
8. Antipsorosis drugs
9. Proteolytic enzymes
10. Antihidrotics
11. Antiseborrhoics
12. Photoprotective substances
13. Antiparasitic drugs
1. Adstringents

- coagulate proteins (↓ penetration of infections)
- anti itch, calming, cooling, antiseptic effect

- alumini acetotartras (sol. Burrow)
- AgNO₃ (0,5-1%)

- natural resources – gala, Juglans, Hammamellis, Alchemilla, Agrimonia, Fragaria
- tannics - Galotannics, Elagotannics

Indications: burns, frost-bites, fissures, diarrhoea...
2. Keratolytics / keratoplastics

Help to remove defective layer of skin
Indications: psoriasis, hyperkeratosis

- ac. salicylicum more than 5 %
- urea 2-20 %
- tretionin 1-3 %

Help to stimulate formation of new skin layers

- ac. salicylicum up to 5 %
- ichtamol, pitchs – Pix lithantracis, betulae, fagi
- tretionin 1-3 %
  (temporary aggravation!)
3. Epithelization supporting drugs

Stimulate growth of new tissue

- pantothenic acid
- dexpanthenol (part of CoA structure)
- peru balsam
- chlorophyll

- chamazulen (Chamomilla)
- benzoylperoxid
- AgNO₃ up to 1%
- propolis...
4. Emollients

- short term calming and hydrating activity
- effect is increased by menthol and camphor

• liquid paraffin
• Vaselina alba, flava (white and yellow)
• Ol.sojae, amygdalae, jecoris aseli, adeps suilus
• Ac. linoleicum
• Urea (up to 10 %) – better penetration

! Lanolin, parabens - allergy !
5. Therapy of acne

- acne vulgaris
- acne rosacea

seborrhoea, ↑androgenes,
hyperkeratosis, bacterial infection

*Propionibacterium acnes*

Aggravation:

- androgenes
- Candida, fungi
- vit. B6, B12
Local: antiseptics - triclosan, hexachlorophen, benzoylperoxide
retinoids – retin acid, tretionin, isotretionin
antibiotics - erythromycin, klindamycinin,
antifungal drugs: klotrimazol, azelaic acid

Systemic: ATB – erytromycin, doxycyclin, minocyclin; retinoids
⇒ hormonal contraception with antiandrogenic gestagene (cyproteron ac., chlormadinon, norgestimat)

Cortikosteroids are contraindicated, they may cause acne! Used only in the most serious conditions.
6. Draining agents (derivancia)

- irritate skin and mucous $\rightarrow$ vasodilatation

- menthol, camphor
- ammonia, spirit, iodine
- pitchs
- bees and snake poisons (Viprosal)
- capsaicine (capsicum anuum) $\rightarrow$
- ol. juniperi, rosmarini...
- oleum et semen sinapis, erucae
7. Anti-itch drugs

⇒ itch sensation is replaced by other feeling

  cold - menthol, camphor

⇒ itch reduction, raw skin prevention

  local anesthetics, local antihistaminics

⇒ drying (plv. adspersorii)

⇒ ichtamol, pitches, keratolytics
**Liquid powder with menthol – for sore-spots**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
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<tr>
<td>Zinc oxide</td>
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<tr>
<td>Talc</td>
<td>25,0</td>
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<tr>
<td>Glycerol 85%</td>
<td>25,0</td>
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<tr>
<td>Solution aerosilic</td>
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<tr>
<td>Menthol racemici</td>
<td>q.s.</td>
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<tr>
<td>M.f.sol.</td>
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<tr>
<td>D.S. liquid powder</td>
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8. Anti-psoriatic drugs

Psoriasis - chronic skin disease characterized by scaly reddish patches, affects up to 2% of population, no clear ethiology (autoimmune disease)

Often affected places: knees, around eyes, cubitus, back

Therapy

Local
Systemic - in grave forms
Local – indifferent vehicles
  + ichtamol
  + weak corticosteroids - betamethason, fluocinolone
  many relapses!
  + pitchs (tct. carbonis detergens)
  + salicylic acid in keratolytic or keratoplastic concentrations depending on the actual state of the skin
  + vitamin D derivates (calcipotriol)
  + retinoids
Systemic – psoralenes – derivates of furanocumarine + phototherapy (UVA)
– retinoids – acitretine
  (serious adverse effects, contraindicated in gravidity)

In very grave forms:
metotrexat - immunosuppressant
cyclosporin - immunosuppressant ATB
9. Proteolytic enzymes

⇒ in therapy of ulcers, decubiti, necrosis in lesion

**Fibrinolysine** – destroys fibrinogen and blood proteins

**Collagenase**

**Deoxyribonuclease** – destroys DNA

Bromelaine (pineapple)

Papain (papaya)

...
10. Antihidrotics

- reduce sudoriferous gland secretion
- act directly on the gland

Local:

• KMnO₄
• salicylic acid
• aldehydes – glutaraldehyde (obsolete)
• tannins

Systemic:

Anticholinergic drugs:
butylskopolamine

Other drugs:
amitryptyline,
nortryptyline, dosulepine,
chloprotixen, diazepam
11. Antiseborrhoic drugs

- reduce ceruminous gland secretion

- ac. salicylicum
- camphor
- ichtamol, pix
- Sulphur
- + azoles

Aggravated by:
- androgenes
- Candida, fungi
12. Photo-protective substances

- protect skin against UV radiation

A) block of all types of radiation - physical factors:
   zincum oxydatum (ZnO), calcium carbonicum (CaCO₃), talc, bolus alba
   Non-toxic, suitable for sensitive individuals, kids, etc.

B) absorb certain wave-lengths - chemical factors:
   Tanninum, Chinninum sulfuricum, acidum paraaminobenzoicum
   Some of them may cause allergic reactions, possible solution could be encapsulation to liposomes
13. Antiparasite drugs

Scabies; Pediculosis - lice (pediculation)

Polychlorine carbohydrates – lindane

organophosphates - *malathione, pirimiphosmethyl*
acetylcholisterase inhibition

carbamates - acetylcholisterase inhibition

pyrethroids – synthetic derivates of *Pyrethrum*,
*interfere with sodium channels functions*
- permethrin