

## Learning unit: Local anaesthetics

### Impact of the learning unit

Local anaesthetics are essential substances in the treatment of pain as they block transmission of pain signals. The knowledge of the individual substances, their pharmacodynamics and pharmacokinetic properties, typical adverse effects, indications and contraindications, is considered to be the basic knowledge of each student of medicine.

### Important terms

techniques of local anaesthesia

- topical (surface) anaesthesia

  - EMLA

- infiltration anaesthesia

- conduction anaesthesia

  - peripheral nerve block

  - regional anaesthesia

  - central conduction anaesthesia

    - subarachnoideal (spinal) anaesthesia

    - epidural anaesthesia

local anaesthetics (LA)

- mechanism of action

- pharmacokinetics

- factors influencing LA effects

  - pH

  - nerve fibre properties (thickness, myelinization)

- adverse effects of LA

  - CNS, cardiovascular, anaphylaxis, methemoglobinemia

- ester local anaesthetics

  - cocaine**

  - procaine**

  - tetracaine**

  - benzocaine**

  - oxybuprocaine**

- amide local anaesthetics

trimecaine

lidocaine

bupivacaine

ropivacaine

prilocaine

articaine

mepivacaine

cinchocaine

vasoconstrictory agents used in LA

### **Learning outcomes**

Student knows basic pharmacological profile (mode of action, unwanted effects, indications and contraindications) of local anesthetics.

Student knows different techniques of local anaesthesia and their characteristics.

Student summarizes basic differences between amide and ester local anaesthetic agents.

Student gives examples of vasoconstrictor agents used in combination with local anaesthetics.

### **Study materials**

Rang & Dale's Pharmacology, 8th edition, 2016, chapter 43, pp. 530-533 ( Local anaesthetics and other drugs affecting sodium channels)

Study materials for courses aVLFA0721p and aVLFA0721c.

### **Exam questions**

*Special pharmacology:* 17. Local anesthetics

*Essential drugs:* 49. procaine/lidocaine, 51. prilocaine