

Prostaglandin E2

Prostaglandins are substances derived from arachidonic acid (eicosanides). PGE2 is a tissue hormone. Its local effect is to relax smooth muscle cells after binding to a specific receptor. It is paracrine and has a short biological half-life.

Physiological effects, pathological significance

Generally, prostaglandin E2 (= PGE2) causes **vasodilation** and muscle relaxation in the cervix in the vessels, which explains its use in obstetrics. It further stimulates osteoblasts to release factors that lead to bone resorption by osteoclasts. Its role is also implicated in the treatment of inflammation, as it **inhibits the signaling pathway** of T cell receptors. It has a positive inotropic effect, and it can also have a positive dromotropic and bathmotropic effect on cells with pathologically reduced resting potential. In addition, with greater blood loss, PGE2 in particular plays an important **regulatory function in the kidney**. It dampens the strong vasoconstrictive effect of mainly adrenaline and norepinephrine, also angiotensin II, on vas afferens and vas efferens. This vasoconstrictive effect could lead to renal ischemia and irreversible damage.

PGE2 is an important mediator of **pain and fever**, especially during inflammation. PGE₂ act on peripheral sensory neurons and on central sites within the spinal cord and the brain. Along with bradykinin, it sensitizes sensory nerve endings for the maintenance of pain. PGE2 also raises temperature set point by acting on the thermoregulation center in the hypothalamus, modulating fever.

Use in obstetrics

PGE2 is used as a medicine mainly to **induce labor**, to **terminate pregnancy** or to **stop heavy bleeding after childbirth**. In neonates, it maintains the opening of patent ductus arteriosus (similar to prostaglandin E1), which is especially important in congenital heart defects, where it needs to remain open until surgery can be performed on the neonate. It is administered intravenously.

Links

Related articles

- Eicosanoids
- Prostaglandins
- Congenital heart defects
- Prostaglandin E1

External links

- Prostaglandin E2 (wikipedia) (https://en.wikipedia.org/wiki/Prostaglandin_E2)

References

[1]

1. KITTNAR, Otomar, et al. *Lékařská fyziologie*. 1. edition. Praha : Grada, 2011. 790 pp. ISBN 978-80-247-3068-4.