

Prostaglandin E1

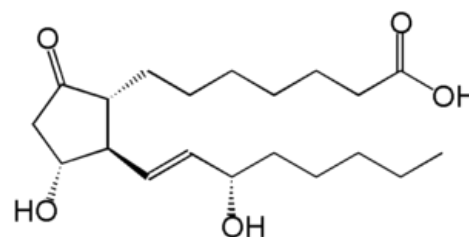
It is a prostaglandin (PG), which is normally produced by human cells from dihomo- γ -linolenic acid (DGLA), which belongs to the ω -6 fatty acids. Like any other prostaglandin, it is released as a paracrine-acting hormone with a short biological half-life.

Pharmacokinetics

Prostaglandin E1 (=PGE1) has a very short half-life, approx. 10 seconds. It is metabolized in the lungs, 60-90% in the first passage.

Effect of PGE1

It generally causes "vasodilation in the systemic and pulmonary circulation" (at the level of arterioles and precapillary sphincters, possibly also muscular arteries), relaxes the smooth muscle of the corpus cavernosum, but stimulates (the contraction of) the uterus and the muscles of the small intestine.



Indication

Dilates an open ductus Botalli in neonates. This condition is undesirable because it leads to an increase in pressure in the right ventricle and causes pulmonary hypertension. However, with congenital heart defects, which are dependent on an open ductus Botalli (otherwise the newborn will not survive), it is, on the contrary, desirable that the ductus remains open. The heart defects are:

- cyanotic defects: transposition of great vessels, tricuspid valve atresia and tricuspid valve stenosis
- acyanotic defects: hypoplastic left heart, coarctation of the aorta, aortic stenosis and interrupted aortic arch

The synthetic variant "alprostadil" is used in the following indications due to its vasodilating effects:

- **erectile dysfunction** - injection of alprostadil directly into the corpora cavernosa of the penis, alternatively transurethral
- **critical limb ischemia** - used the vasodilatory effect of alprostadil in order to increase blood flow by peripheral vasodilation

Another synthetic analogue, **Misoprostol**, can be used in the treatment of peptic ulcer, silent abortion and to induce labor or abortion.

Mode of submission

Continuous intravenous infusion. See above for specific methods of administration

Links

Related Articles

- Eicosanoids
- Prostaglandins
- Congenital heart defects
- Prostaglandin E2

References

- LINCOVÁ, Dagmar – FARGHALI, Hassan. *Základní a aplikovaná farmakologie*. 2. edition. Galen, 2007. 672 pp. pp. 340. ISBN 978-80-7262-373-0.
- SKINNER, Jon – HUGHES, Brenda – OLSON, Cherry. *Prostaglandin E1 (Alprostadil)* [online]. [cit. 2015-12-25]. <<http://www.adhb.govt.nz/newborn/drugprotocols/ProstaglandinE1Pharmacology.htm>>.