



- Oxytocics include the following:

• **Oxytocin:**

- ✓ It is an endogenous product produced by the hypothalamus and stored in the posterior pituitary gland (neurohypophysis).
- ✓ It has an important role in labor and milk ejection.
- ✓ As pregnancy progresses, expression of oxytocin receptors is increased in the myometrium under the influence of increased level of estrogen.
- ✓ Oxytocin is administered as:
 - ❖ *IV (for initiation and augmentation of labor).*
 - ❖ *IM (to stop post-partum hemorrhage).*
- ✓ Oxytocin has a short half life ($t_{1/2}$) of 5 minutes and it is eliminated by liver and kidneys.
- ✓ Oxytocin receptors are G protein-coupled receptors enhancing uterine contractions and the release of prostaglandins.
- ✓ Different doses express different effects:
 - ❖ *Small dose:* increase the frequency and force of contractions.
 - ❖ *High dose:* sustained powerful contractions with less phase of relaxation.
- ✓ Therapeutic uses of oxytocin:
 - ❖ Induction of labor.
 - ❖ Augmentation of labor.
 - ❖ Control of post-partum hemorrhage.
- ✓ Oxytocin challenge test: when the uterus contracts, placental perfusion will be reduced and thus supply to the fetus will decrease. This reduction can be severe enough to harm the continuation of pregnancy.
- ✓ Toxicities:
 - ❖ Excessive uterine contractions might cause fetal distress, placental abruption or uterine rupture.
 - ❖ High doses might also cause activation of vasopressin receptors and sudden hypotension.
- ✓ Contraindications:
 - ❖ Fetal distress.
 - ❖ Prematurity.
 - ❖ Cephalopelvic disproportion.

• **Ergometrine:**

- ✓ Ergot is produced by a fungus that grows on grains → causing severe arterial vasoconstriction and death when consumed by humans in high quantities.
- ✓ Symptoms include:
 - ❖ Gangrene.
 - ❖ Abortion of a pregnant lady.
- ✓ Small and high doses: effects are similar to oxytocin but very quickly contraction become sustained and prolonged. For this reason, it is not used for induction of labor because a doctor will not know if he reached a dose that will cause sustained contractions (and this is considered to be dangerous). Therefore, this drug is used to control post-partum hemorrhage by causing contraction of uterine smooth muscles and blood vessels (vasospasm).
- ✓ Side effects include:
 - ❖ Nausea and vomiting.
 - ❖ Abdominal pain and diarrhea.
 - ❖ Headaches.
 - ❖ Chest pain and palpitations.
 - ❖ Bradycardia.



- ❖ Hypertension.
- ❖ Arrhythmias.
- ❖ Gangrene and hallucination (in case of overdose).
- ✓ Contraindications:
 - ❖ Pregnancy.
 - ❖ Vascular disease.
 - ❖ Psychosis.

- **Prostaglandins:**

- ✓ PGE₁, PGE₂ and PGF_{2α} are often used with oxytocin for induction of labor and abortion. They aid in cervical relaxation.

- **Tocolytics include the following:**

- **β₂-agonists:** such as ritodrine and terbutaline.
- **Magnesium sulphate.**
- **Ca²⁺-channel blockers:** such as nifedipine and nicaldepine.
- **NSAIDs:** such as indomethacin.
- **Oxytocin receptor antagonists:** such as atosiban.

Note: these drugs are used to stop contractions in pre-term labor or at most delay it for a days or two. Steroids can be administered to the fetus to aid in the maturation of lungs during this period.