SUMMARY AND CONCLUSION

Narcotics are commonly used to relieve pain during early labour . But their action on uterine contraction is poorly understood . The objective of this work is to study the effect of two commonly used narcotic analgesics, namely : morphine and fentanyl on the uterine contraction of isolated gravid and non - gravid rabbit and rat uteri and to investigate the possible mechanism of action of these drugs on these uteri .

In this work, gravid and non - gravid rabbits weighing 1.5 -2 kg and gravid and non - gravid albino rats weighing 140 - 180 gm were used . The uterus was dissected out after killing the animal and was suspended in a 10 ml capacity organ bath containing Dale solution. Oxygen was passed through the solution . Temperature was kept constant at 37°C in case of rabbit uterus and 32°C in case of rat uterus . An isotonic lever was used to record the uterine contractions .

In this study, morphine in doses of 0.5, 1, 2 and 4 ug / ml and fentanyl in doses of 0.1 , 0.2, 0.4

and 0.8 ug / ml, produced dose - related stimulation of the contraction of isolated gravid rabbit uterus . They increased the tone, amplitude and frequency of uterine contraction and this effect was reversed by repeated washing of the preparation . The possible mechanism of this stimulatory action may be through an action on alpha - adrenoceptors , release of prostaglandin and / or an action on opiate receptors (?), as this action was blocked by phentolamine (10 ug/ml), indomethacin (2 ug/ml) and naloxone (30 ug/ml) , but not abolished by atropinization .

On the contrary , both morphine in doses of 0.5 , 1 , 2 and 4 ug / ml and fentanyl in doses of 0.1 , 0.2, 0.4 and 0.8 ug / ml produced dose - dependent inhibition of the uterine contraction of isolated non - gravid rabbit uterus . They decreased the tone, as well as the height and frequency of uterine contraction and this effect was reversed by repeated washing of the preparation.

The results concerning the effect of the studied drugs on contractility in isolated non - gravid rabbit uterus were analysed statistically using the method of

Litchfield and Wilcoxon (1949) . The IC_{50s} were computed to be 1.2 (0.6 - 2.4) and 0.27 (0.135 - 0.54) ug / ml for morphine and fentanyl respectively . The potency ratio was computed to be 4.4 (1.65 - 11.7) which means that fentanyl is about four times as potent as morphine in suppressing contraction in the isolated non - gravid rabbit uterus .

The effect of both morphine and fentanyl was not abolished by propranolol (1 ug / ml); it seems to be through a direct action on the uterine smooth muscle .

In addition, both morphine in doses of 0.5 , 1 and 2 ug / ml and fentanyl in doses of 0.05 , 0.1 and 0.2 ug / ml were found to induce dose - related inhibitory effect on the contraction of the isolated gravid rat uterus . They decreased the tone, the height and frequency of uterine contraction and this effect was reversed by repeated washing of the preparation .

Regarding the effect of the studied drug on contractility in gravid rat uterus, the data were statistically analysed adopting the Litchfield and

Wilcoxon (1949) calculation . The IC_{50s} were found to be 0.9 (0.47 - 1.71) and 0.053 (0.019 - 0.148) ug / ml for morphine and fentanyl respectively . The potency ratio was computed to be 16.98 (5.07 - 56.9) . This shows that fentanyl is about 17 times as potent as morphine in inhibiting contractility of the isolated gravid rat uterus .

The effect was partly abolished by propranolol (1 ug / ml), but not abolished by naloxone (30 ug / ml) ; it seems to be mediated partly through beta - adrenoceptors and partly through a direct action on uterine smooth muscle .

However, both drugs were found to have insignificant effect on the contraction of isolated non - gravid rat uterus .

It could be concluded, from this study, that both morphine and fentanyl have similar qualitative effects on activity of isolated gravid and non - gravid rabbit and rat uteri . But they differ in their potency ; fentanyl is more potent .

Both drugs were found to produce :

1- Stimulation of isolated gravid rabbit uterus .

2- Inhibition of isolated gravid rat uterus .

3- Inhibition of isolated non - gravid rabbit uterus .

4- Insignificant effect on isolated non - gravid rat uterus .

Moreover, the present work may suggest the presence of opiate receptors in the gravid rabbit uterus .