The Spasmolytic and Relaxing Effect of Streptidin on Smooth Muscle

Streptidin'in Düz Adele Üzerine Spasmolitik ve Relaksan Etkisi

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Streptomycin has an abortive effect on pregnant test animals (1). It is well known that streptomycin has a relaxant effect on the colon of the rat (2), on the ileum of the guinea pig (3) and curarising effect on the striated muscles (4). It is also known that some antibiotics show a biphasic stimulating or depressing affect which is proportional with the dose given. As well, streptomycin has a relaxant effect on the uterus of the rabbit, guineapig, rat and the fibromyomatic uterus of the woman (5).

It was stated that this relaxant effect of streptomycin could be related to the guanidin and diamino groups in its structure (2). After splitting (6,7,2) of the streptomycin molecule into streptidin and streptobiosamin we have examined the spasmylytic and relaxant effect of the products and found that the spasmylytic and relaxant effect was due to the streptidin fraction of the streptomycin molecule. Streptobiosamin itself has been found in effective on the plain muscle.

**MATERIALS AND METHOD**

For the examination of the isolated guineapig uterus we have used Dale solution which was put into the isolated organ bath and warmed up to 37°C. during the procedure.

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The effect of the streptomycin, streptidin and streptobiosamin on the contraction of the muscle induced by acetylcholin has been studied. The capacity of the reservoir used for the purpose was 50 ml.

Other material used were:

ACETYLCHOLIN $10^{-3}$
STREPTOMYCIN SULFAT (R) squibb
STREPTIDIN SULFAT
STREPTOBIOSAMIN

RESULTS AND DISCUSSION

After using 1 mcgr of Acetylcholin the contraction of the guineapig uterus reached to its pick, the spasmyolytic and relaxant effects of 500 mgr. Streptidin, 100 mgr. Streptomycin and 500 mgr. of streptobiosamin in 0,5 ml solution were examined. 500 mgr of streptidin and 100 mgr of streptomycin have shown the same rate of antispamodic effect whereas streptobiosamin showed no such effect at all. 100 mgr of streptidin alone was five times less effective than the same amount of streptomycin. Since we found streptobiosamin ineffective and the streptidin less effective than the streptomycin as a whole, the high effect observed in the streptomycin then, might be due to the combination of streptidin and streptobiosamin.

![Graph](image)

**Fig : 1**

1,3,5,7,9,11,13 Acetylcholin 1 mcgr
2 Streptidin 0.5 gr
4 Streptomycin 100 mgr
6 Streptidin 1 gr
8 Streptidin 1 gr
10 Streptomycin 100 mgr
12 Streptidin 1 gr
14 Streptobiosamin 0.5 gr
SUMMARY

The abortive effect of the streptomycin on pregnant test animals and its relaxating and antispasmodic effect on smooth muscle is caused by its streptidin fraction since the streptobiosamine moiety of the streptomycin molecule has no relaxating effect, it is still unknown why the combination of streptidin and streptobiosamin in the streptomycin molecule shows a more potantiall effect then in the case when the streptidin fraction is used seperately.

ÖZET

Streptomycin’in gebe tecrübe hayvanlarndaki abortif etkisi ve düz adeledeki relaxan antispazmodik etkisi streptomycin’in parçalanma fractionlarndan olan streptidin’den ileri gelmektedir. Diğer parçalanma maddesi olan streptobiosamin’in etkisi yoktur. Streptidin ve streptobiosamin’in beraberce bulunduğu streptomycin’de ise relaxan etki separe kullanılan streptidinden daha fazladır.

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REFERENCES

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