Acetyicholino Competitif Curarizing Effect of the Streptidin on the Striated Muscle

Streptidinin Çizgili Adele Üzerinde Asetilkolinokompetitif Kurarızan Etkisi

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Up to this time only some of the effects of the streptomycin which is not related to its antibiotic property were recognized.

Among these, the curariform effect on the dog (2), neuromuscular blocking effect during anesthesia in the man, (6), the relaxant antispasmodic effect on the guinea pig ileum (4), on the colon of the rat (7), on the uterus of the guinea pig, and human (1), are well known. It is reported that the ralacting effect of the streptomycin on the streated muscle might be related to the guanidin moiety in its molecule (7).

Being aware of the peresent knowledge and having split the streptomycin into its constituents, streptidin and streptobiosamin (7,3,5) we have commenced our experiments.

MATERIALS AND METHOD

Streptidin and sterptobiosamin obtained from streptomycine, were tested on the musculus abdominis rectus of the frog. The mo-
ovement of the musculus rectus abdominis was recorded in the isolated organ bath, which contained Ringer solution at 20° centigrade. The reservoir used was of the capacity of 50 ml and the material used were the followings.

**ACETYCHOLIN 10^{-3}**

**ESTIGMIN amp. (R) (Embil. İst.)**

**d - TUBOCURARIN**

**ATROPINE 10^{-3}**

**STREPTOMYCIN SULFATE (R) Squibb**

**STREPTIDIN SULFATE**

**STREPTOBIOSAMİN**

**RESULTS AND DISCUSSION**

The contraction of the musculus rectus abdominis induced by acetylcholine was recorded. It has shown that the acetycholin had no effect on atropinized muscle Fig - I - 10,11, Fig - II Δ, 8,9. Also, the addition of 100 mgr Streptomycin on the rectus abdominis in the reservoir hinders the contracting effect of acetylcholin the way as the curar does. Fig. 1 - 20, Fig. 2 ▲ 5,6,7. The addition of 500 mgr. Streptidin into the reservoir has given the same results as seen on the figures, 2, ●, 5,6,7.

But streptobiasamin, when added on the muscle in the reservoir could not prevent the muscle from contraction as seen in the case of streptidin (Fig - 1, ○, 4).

Estigmin has shown the same antagonistic affect against the relaxation of the muscle induced by streptomycin and streptidin as in the case of curarized muscle.
Therefore it is to be assumed that the curarizing effect of streptomycine is due to the streptidin moiety in its molecule and it is the acetylcholinocompetitive affect described by CHEYMOL.

**Fig : 1**

*Musculus rectus abdominis of frog*

1,2,3 100 mcgr Acetylcholin
4,5,6 100 mcgr acetylcholin and 200 mcgr Estigmin mixtur
7,8 200 mcgr Estigmin
9 Atropinization 2,5 x 10⁻³
10,11 100 mcgr acetylcholin
12 200 mcgr estigmin
13 500 mcgr estigmin
14 Curarization 100 mcgr d - tubocurar
15 100 mcgr acetylcholin
16 200 mcgr acetylcholin
17 200 mcgr estigmin
18 500 mcgr estigmin
19 Streptomycin 100 mgr
20 100 mcgr acetylcholin
21,22 200 mcgr estigmin
23 500 mcgr estigmin
Fig: 2
Musculus rectus abdominis of frog

- O
  1,2 100 mcgr Acetylcholin
  3 0,5 cc Streptobiosamin
  4 100 mcgr acetylcholin
  5 200 mcgr estigmin

- ●
  1,2,3 100 mcgr acetylcholin
  4 0,5 gr Streptidin
  5,6,7 100 mcgr acetylcholin
  8,9 200 mcgr estigmin

- ▲
  1,2 100 mcgr acetylcholin
  3 100 mcgr estigmin
  4 100 mgr Streptomycin
  5,6,7 100 mcgr acetylcholin
  8 200 mcgr estigmin
SUMMARY

The curarizing affect of streptomycine on streated muscle is due to the streptidin moiety. Since this curarizing effect could be avoided by, the inhibitors of cholinesterase, such as Estigmin (Neostigmin), the effect of streptomycine and streptidin on the striated muscle must be the acetylcholinocompetitive curarizing effect described by CHEYMOL.

Results of our experiments (such as dose-respons curves and acetylcholinocompetitif effect non depolarizing effect) on the streptidine moiety which are not related to the musculus rectus abdominis of the frog will be reported later.

ÖZET

Streptomycin'in çizgili adeledeki kürarizan etkisi streptomycin molekülündeki Streptidin den ileri gelmektedir. Kürar'a antagonist etkiyeni kolinesteraz inhibitory Estigmin (Neostigmin) in aynı şekilde streptomycin'in veya streptidin'in meydana getirdiği kürarizan etkiyede antagonist etkimesinden dolayı, CHEYMOL un tasnif ettiği şekilde streptomycin'in veya Streptidin'in kürarizan etkisi asetilkolinokompetitif kürar etkisi olmaktadır.

REFERENCES


