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Acetylecholino Competitif Curarizing Effect of the Streptidin on the Striated Muscle

Streptidinin Çizgili Adele Üzerinde Asetilkolinokompetitif Kurarizan Etkisi

Orhan ALTINKURT *

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 anesthesis 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 streptomycine 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 stretomycine 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-

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* Department of pharmacology, Faculty of Pharmacy University of Ankara

vement of the musculus rectus abdominis was recorded in the isolated organ bath, wich contained Ringer solution at 20° centigrat- The reservoire used was of the capacity of 50 ml and the material used were the followings.

ACETYCHOLİN 10^{-3}

ESTİGMİN amp. (R) (Embil. İst.)

d - TUBOCURARİN

ATROPİNE 10^{-3}

STREPTOMYCİN SULFATE (R) Squibb

STREPTİDİN SULFATE

STREPTOBİOSAMİN

RESULTS AND DISCUSSION

The contraction of the musculus rectus abdominis induced by acetylcholine was recorded. It has shoven that the acetycholin had no effect on atropinized muscle Fig - I - 10,11, Fig - II △, 8,9 -

Also, the addition of 100 mgr Streptomycin on the rectus abdominis in the reservoirhinders 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 reservoire has given the same results as seen on the figures, 2, ●, 5,6,7.

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

Estigmin has shoven the same antogonistic affect againts the relaxation of the musele induced by streptomycin and streptidin as in the case of curarizied muscle.

Therfore it is to be assumed that the curarizing effect of streptomycine is due to the streptidin moeity in its molecule and it is the acetylcholinocompetitive affect described by CHEYMOL

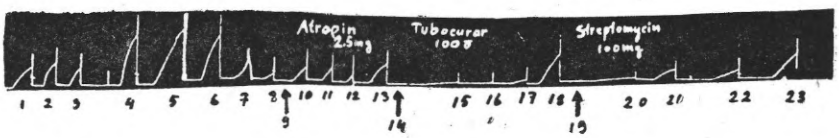

Fig : 1

Musculus rectuc 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 $2,5 \times 10^{-3}$
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

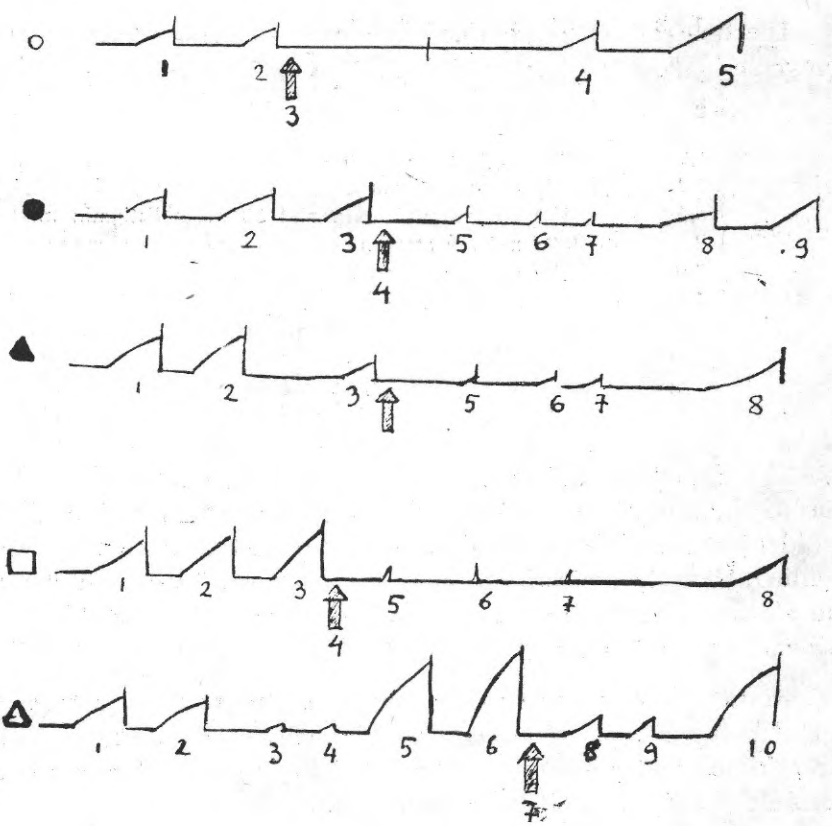

Fig : 2

Musculus rectuc abdominis of frog

○	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

□	1,2,3	100 mcgr acetylcholin
	4	100 mcgr **d - tubocurur**
	5,6,7	100 mcgr acetylcholin
	8	200 mcgr estigmin
△	1,2	100 mcgr acetylcholin
	3,4	50 mcgr estigmin
	5,6	100 mcgr acetylcholin and 50 mcgr Estigmin mixtur
	7	0,25 x 10^{-3} atropin
	8,9	100 mcgr acetylcholin
	10	500 mcgr estigmin

SUMMARY

The curarizing affect of streptomycine on streated muscle is due to the streptidin moeity. Since this curarizing effect could be avoidet 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 depolarazing effect) on the streptidine moeity wich 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 etkiyen kolinesteraz inhibitörü Estigmin (Neostigmin) in ayni 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.

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