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PAPERS PRESENTED IN PHARMACOLOGY SECTION, FIRST WORKING CONFERENCE OF CZECHOSLOVAK PHYSIOLOGISTS, BIOCHEMISTS, AND PHARMACOLOGISTS

The First Working Conference of Czechoslovak Physiologists, Biochemists, and Pharmacologists took place in Prague on 9-17 October 1952. The meeting was dedicated to the memory of N. Ye. Vvedenskiy. The following papers were presented in the section of pharmacology, subdivision of the pharmacology of exteroreceptors and interoreceptors. G. Raskova and others of the Pharmacological Institute, Scientific Research Institute of Epidemiology and Microbiology, Prague, presented three papers on the properties of the toxin of TSK (Shigellae Shigae). In the investigation which formed the subject of the first paper, the changes in the sensitivity of intestinal interoreception in cats and rabbits were measured during the process of immunization with TSK. In the course of the experiments described, the reflex changes in the blood pressure and respiration were determined. It was found that TSK produces in nonimmunized animals considerable reflex changes of the blood pressure and respiration; for a certain time it blocks the irritation of interoreceptors with acetylcholine, brings about a gradually decreasing reaction as immunization progresses, and beginning with the third immunization produces no reflex changes at all. In animals immunized to the last stage mentioned, one cannot bring about even by means of acetylcholine the reflex changes of blood pressure and respiration which take place normally. With the aid of adenosine ATP (triphosphoric acid), which under ordinary conditions removes the blocking brought about by TSK, one may during the course of immunization increase to some extent the sensitivity toward acetylcholine, but not towards TSK. The results obtained were interpreted by the authors of the paper from the standpoint of Vvedenskiy's theory.

The second paper presented by Raskova and her collaborators dealt with the influence of ATP acid on the toxicity of TSK. In the investigation discussed in the second paper it was established that there is a two-phase effect of ATP on the toxicity of TSK in white mice, the nature of which depends on the time of administration of ATP. When ATP and TSK are administered simultaneously, the

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toxicity of TSK is usually raised, although the doses of ATP are relatively small. On the other hand, when ATP is administered subsequent to the introduction of TSK, the toxicity of TSK is considerably lowered. The maximum of the detoxification achieved by ATP is within 30-36 hours after the administration of TSK. A statistical evaluation of the results has been made.

The third paper presented by Raskova and others dealt with changes in the parabiotic process produced by the adenosine triphosphorec acid of TAK. In the course of the investigation reported in this paper, it was established that TSK brings about a parabiotic process in a nerve-muscle preparation of the cat in situ. As a result of the immunization of the animals with TSK, the course of parabiosis is accelerated and reaches a definite maximum at the time of the fourth or fifth immunization. However, the parabiotic process can not be brought about by TSK subsequent to immunization. This is a newly established property of the toxin. The results of the investigation were interpreted from the standpoint of the concepts of Vvedenskiy and Ado.

L. Vacek of the Pharmacological Institute, Brno, in a paper entitled "The Effect of the Irritation of Sensory Organs on the Growth of Some Laboratory Animals," reported on experiments in which the young of laboratory white mice, rats, and guinea pigs were subjected during 10 weeks to an incessant irritation of the sensory organs with sound and light. During this time, the growth of the animals was determined by measuring the changes in weight. Animals whose sensory organs were not irritated were used as controls. The animals were weighed weekly. It was found that only insignificant changes were produced in male mice, while the weight of female mice dropped constantly beginning with the 4th week. No changes were observed in male rats, while the growth of female rats was stimulated. Eighty percent of the male guinea pigs which had been irritated with light and sound perished, while only 20% of the female guinea pigs died. A reduction of weight was observed in the guinea pigs that did not perish.

E. Lecian and E. Lecian, Jr, of the Pharmacological Institute at Brno, gave a paper dealing with the effect which irritation of sensory organs has on the action of strophanthin and digitalis. They found that rats which had been irritated by means of sound and light survived otherwise lethal doses of strophanthin or digitalis. It was established by them that the hearts of rats whose sensory organs had been irritated exhibited a lower content of calcium than the hearts of control rats that had not been subjected to any irritation. The increased resistance to the toxic action of the drugs is explained by the reduction of the calcium content in the heart brought about by the sensory irritation. The authors conclude that during a period of great excitation, particularly in cases when cardiac patients are treated, one should use doses of cardiac stimulants which are higher than those administered ordinarily.

M. Gava, I. Jelinek, and L. Sirucek of the Pharmacological Institute, Scientific Research Institute of Epidemiology and Microbiology, Prague, presented a paper on the dynamics of the hemolytic action of streptolysin O. They investigated the action of streptolysin O, the toxicity of which in mice weighing 20 grams comprises 2.5 to 4.5 units of DL_{50} and in rabbits approximately 40 units per kilogram of weight. The results of the measurements carried our on 85 rabbits by means of the modified photometric method, proposed by V. G. Karru and F. V. Cornok, showed that when the dose of streptolysin O is increased in a geometric proportion, the hemolysis increases relatively slowly, which is contrary to the results obtained by Bernheimer. The maximum was achieved more rapidly with higher doses. With low doses the curve of hemolysis has a single, sharp maximum, while with high doses the level of hemolysis remains at the highest point during a relatively long time within the limits of a definite oscillation wave of the curve.

I. Vanechek, M. Tronickova, and L. Sirucek of the Pharmacological Institute, Scientific Research Institute of Epidemiology and Microbiology, Prague, also presented a paper dealing with the properties of streptolysin O. In the investigation reported in this paper it was established that streptolysin O often produces a fall of blood pressure in cats which are in a state of chloralose narcosis and rabbits which are in a state of urethane narcosis. In other cases streptolysin O has no effect on the blood pressure. As a result of the action of streptolysin O, the reaction arising in response to the stimulation of interoreceptors by acetycholine is blocked for a short time. After prior sensitization by intraperitoneal administration of streptolysin O, there is a characteristic blocking of interoreception, a condition which after a certain time passes into a paradoxal stage. Then the animals perish after a violent reaction, because their hearts stop.

Z. Votava, I. Sramkova, and M. Chvatolova of the Scientific Reaearch Institute of Pharmacy and Biochemistry, Prague, reported on sulfonium analogs of spasmolytic substances and on their pharmacological properties. According to this paper, a group headed by Dr Protiva prepared three sulfonium analogs of antihistaminic substances and eight sulfonium analogs of spasmolytic substances, in which nitrogen was replaced with sulfur. The replacement of nitrogen with sulfur did not change the spasmolytic effect of the substances in question but raised their toxicity, particularly on intravenous administration. Only substance 3-1216 (2-phenyl-cyclohexylacetoxy-ethyl-dimethyl-sulfonium iodide) produces a high spasmolytic effect. This effect was 50 times higher than that of atropine on the isolated intestine and approximately the same as that of atropine in vivo. The effect on salivation and elimination of tears after stimulation was approximately 20 times lower than that produced by atropine.

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