ABRUPT FALL IN BLOOD PRESSURE BY INTRAVENOUS INJECTION OF TRIPHOSPHOPYRIDINE NUCLEOTIDE

Sir,

Triphosphopyridine nucleotide (TPN), functionally categorized as coenzyme participates in a large number of physiologically important oxidation-reduction reactions. It is widely distributed and occurs, practically, in all the cells. Keeping in mind the potent vasodepressor action of adenosine and related substances (1, 2 & 3), we got interested to investigate whether triphosphopyridine nucleotide has any action on blood pressure or not.

Sixteen rats of either sex, purchased from Haffkine Institute, Bombay weighing 150 to 200 *gm* and rabbits of either sex, purchased from local market, weighing 1 to 2 *kg* were used. Animals were anaesthetized with urethane 1.4 *gm/kg* given by intramuscular injection. Carotid artery blood pressure was recorded by usual methods through a mercury manometer on smoked drum paper of a rotating kymograph. Sodium salts of TPN and its reduced form TPNH (Sigma Chemical Co.) dissolved in distilled water were injected by femoral vein.

TPN and TPNH produced marked fall in blood pressure of rats and rabbits. In rats, fall in blood pressure produced by TPN was abrupt, dose dependent, reproducible and of short duration lasting for about 1 to 3 minutes. In some experiments, the fall was followed by a small rise in blood pressure. TPN at a dose of 62.5 $\mu g/kg$ body weight could produce fall in blood pressure with a mean value of 42 *mm* Hg and the extent of fall observed was some times up to 70 *mm* Hg in animals with an original pressure of about 160 *mm* Hg. Hypotensive response was present in all the animals, although it varied from animal to animal and also depended upon the intital pressure of the animal. In case of TPNH, although fall of similar character was observed in rat's blood pressure but its magnitude was less marked than the average fall produced by similar doses of TPN (Table I). Hypotensive effect of TPNH also was dose dependent, immediate, transient and reproducible. After recording the vasodepressor response of these compounds, atropine sulphate was injected intramuscularly in doses sufficient to block the hypotensive response of 1 $\mu g/kg$ of acetylcholine, and again response by these compounds was observed. Studies on such animals revealed antagonism of vasodepressor action of TPN and TPNH by atropine. Fig. I shows typical response obtained with TPN in an animal before and after atropine administration.

TABLE I

Effect of TPN and TPNH on rat carotid artery blood pressure

Dose	*Fall in mm Hg B.P.*	
	TPN	*TPNH*
62.5 $\mu g/kg$	42 ± 6.54 (8)	36 ± 4.03 (8)

Rats used for TPN were not used for TPNH. S.E. Standard error of the mean, values in brackets denote number of experiments.

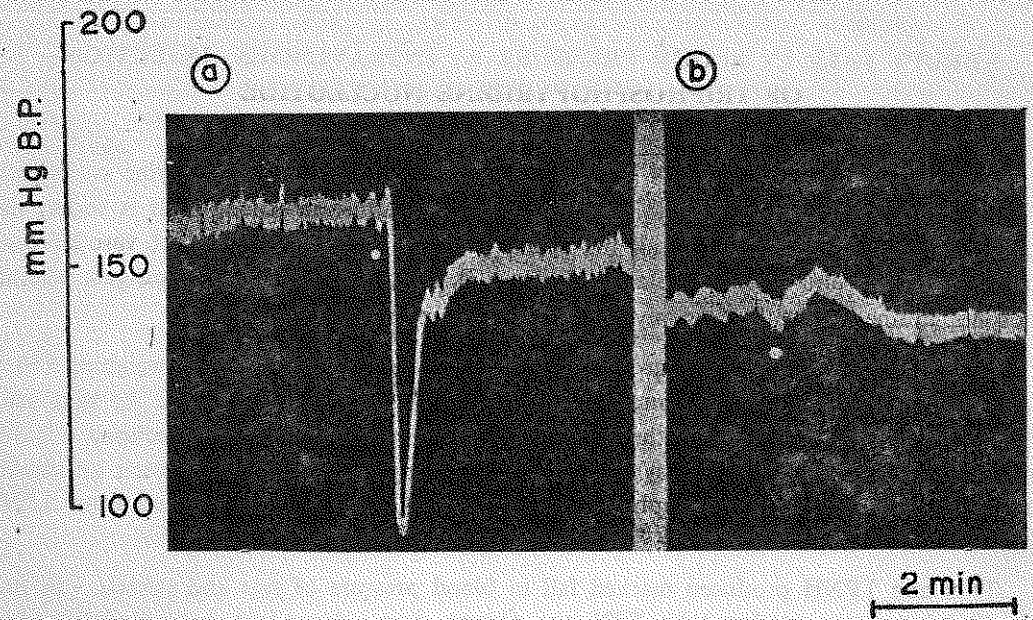

Fig. 1 : *Original records depicting typical response obtained by 62.5 µg/kg of TPN on carotid artery blood pressure in rat before (A) and after (B) atropine. Two mg of atropine in two doses was administered intramuscularly, at the time shown by arrow. One µg/kg of acytlcholine did not produce any fall in the rat after atropine. White dots indicate time of drug injection*

In rabbits TPN produced fall in blood pressure which was immediate, dose dependent and lasted little longer for about 3 to 6 minutes. A 62.5 *µg/kg* dose of TPN, in rabbits, produced fall in blood pressure similar to that in rats which varied from 28 to 70 *mm* Hg. TPNH produced less marked fall in rabbit's blood pressure as compared to TPN, but nature of fall was similar and of the same duration.

The study finds that TPN and TPNH possess potent, transient, hypotensive action and this effect can be antagonized by atropine in rats.

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