The Pharmacology of an Indian Drug – A New Therapeutic Approach in the Treatment of Essential Hypertension

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ABSTRACT

A disturbance in the regulating mechanism of the circulation is primarily the basis of hyperplesia. There is a disturbed functioning of the circulatory system. Through a sensitization of the arterial system and of the centres of the vegetative nervous system, a state of irritability of the peripheral arteries and arterioles is brought about, whereby the vessels react to all kinds of stimuli of vasoconstriction. In this, it is immaterial whether disturbance originated primarily in the periphery or vegetative centres.

At first it is usual for the hypertension to be labile, that means the pressure measured in a state of resting is still normal. The increase in pressure results only through psychic and somatic stimuli in the sense of the so-called ‘MINUTE-VOLUME-HIGH PRESSURE’. By a prolonged duration of the stimulus to the vegetative centres however, the circulatory dysfunction as well as the increased and constant tension of the arterial system becomes fixed. There comes about an adjustment of blood pressure at a higher level (i.e. a fixed high pressure). The continuous spasmodic condition of the vessels necessitates the use of a higher pressure (i.e. the resistance high pressure) in order to overcome the vasospasm of the periphery. Since constricted vessels undergo sclerosis especially easily, the picture of resistance high pressure mostly shows all transitory stages towards the final syndrome of elasticity high pressure.

An advance in the therapy of hypertension must aim at the following objectives:
1. The increased susceptibility of the vegetative nervous system to stimuli to be reduced.
2. The irritability of the arterial system to be quietened and the exaggerated circulatory reflexes to be toned down.
3. Arterial trunks to be dilated.

These requirements of an effective high-pressure therapy, as confirmed by the results obtained by VIDA and our own investigations, are especially happily met by treatment with the Indian drug *Rauwolfia serpentina* whose total alkaloids are contained in the preparation SERPINA. According to ARNOLD [Ther. Gegenw, (1952), 167] who investigated the drug quite independently, the alkaloidal ingredients of SERPINA represent “the most potent hypotensive substance acting on the vegetative nervous system known so far.”

As our own investigations have shown, the quietening of the cardiac activity as reported by Sen and Bose is only possible with high doses. With smaller doses, as is customary for
therapeutic purposes, we could not observe any worthwhile change in the heart action. On a normally working heart, the usual therapeutic doses do not seem to exhibit any worthwhile change in activity. However, for a heart showing accelerated sympathetic activity, the quietening effect of the drug on the conduction mechanism, excitability, as well as in respect of a lowering of the peripheral resistance, cannot be anything else but beneficial. The hitherto obtained good clinical results confirm these experimental findings even in the presence of cardiac insufficiency as a complication of hypertension.

Of importance is the observation that the drug also exhibits a strong reduction of the capillary permeability. RIECHERT has reported in this connection indicating a permeability reducing effect of sympathicolysis substances like ergotamine and dihydroergotamin in respect of the lung and the blood – C.S.F. – threshold and refers to their inhibitory action on the oedema phase of the inflammation live-egg albumin.

In comparative experiments on the action of Rauwolfia serpentina and Hydergin in rat-claw inflammation produced by egg albumin, as per SELYE’s Method, it was possible for us to determine a suppressive effect of both preparations on the oedema phase. A comparison of the permeability-reducing effect of the sympathicolysic Hydergin with that produced by the extract of Rauwolfia serpentina shows a stronger action of the latter. It is superfluous to enter here into any detailed discussion about the significance of the permeability reducing effect in the therapy of hypertension.

It would be premature (in this preliminary report) to attempt giving an over-all survey of the manifold and individual actions of the drug Rauwolfia serpentina here. For this purpose many comparative trials with total extracts and pure alkaloids of the drug would be necessary. The main idea of this first report was to focus attention properly on the unmistakable and great advantages of this drug which rest firmly on a therapeutically beneficial sympathicolytic, sedative and spasmolytic action.

From the data presented above, it can safely be concluded that the active substances of the drug as present in the preparation SERPINA, constitute an excellent sedative and a reliable therapeutic for the treatment of Essential Hypertension.