Arterial hypertension (AH) is diagnosed in 8-25% of the adult population of different countries of the world; in our country, according to the available data, evidently about 30 million persons suffer from this disease [1]. An important role in the prophylaxis and therapy of AH is allotted to pharmacotherapy. According to the data of WHO and the All-Union Cardiological Scientific Center of the Academy of Medical Sciences of the USSR, when antihypertensive agents are taken regularly on a long-term basis, normalization of the arterial pressure (AP) can be achieved in 60-85% of the cases [1]. Extremely high requirements for effectiveness and safety are set for the drugs used for the prophylaxis and therapy of AH, since this group of drugs is used by large groups of the population.

The modern drugs used for the treatment of AH include drugs that act on the central and peripheral adrenergic mechanisms of regulation of the vascular tone (rauwolfia alkaloids, α- and β-adrenoblockers, clofelin, etc.), diuretics, vasodilators, as well as inhibitors of the renin-angiotensin system (RAS) of the organism. The last of the enumerated groups of drugs is now attracting considerable attention from researchers and clinicians in view of the fact that the important role of the activation of this system in the pathogenesis of AH has been convincingly demonstrated, while inhibitors of the formation of angiotensin II and antagonists of its biological effects are being used successfully for the treatment of a number of forms of AH and certain other cardiovascular diseases.

Among RAS inhibitors, several groups of drugs that act on various links of it are distinguished [2]: a) renin inhibitors; b) angiotensin II antagonists; c) dipeptidyl-carboxypeptidase (DCP) inhibitors. Data on the pharmacological properties of renin inhibitors and angiotensin II antagonists, as well as on the mechanisms of their action and clinical use, are summarized in a number of survey publications [2-6].

The present review pertains to antihypertensive drugs whose mechanism of action is associated chiefly with DCP inhibitors; questions of the search for selective inhibitors of this enzyme for the creation of new antihypertensive agents of this class will also be treated.

It is known that inhibitors of such enzymes as acetylcholinesterase, monoamine oxidase, phosphodiesterase, cAMP, prostaglandin synthetase, etc., are widely used in the pharmacotherapy of various diseases. DCP is one of the enzymes that can be used in this way: By influencing their activity one can affect various links in the regulation of the hemodynamics and maintenance of the level of the AP.

According to the modern concepts, two humoral biochemical systems participate in the regulation of the vascular tone and AH, together with the central and peripheral nervous system: the RAS and the kallikrein-kinin system (KKS), which carry out their functions by the production first of an octapeptide angiotensin II, which exerts a powerful pressor action, and second by the production of hypotensive peptides, denoted by the general term of "kinins" (bradykinin, etc.) [7-11].

Kinins are formed (see scheme 1) from inactive precursors – kininogens – under the influence of activated proteolytic enzymes – kallikreins – that are present in the blood and tissues. Angiotensin II is formed from a decapeptide with low biological activity, angiotensin I, which in turn is split out from the substrate, angiotensinogen, under the influence of activated renin, an enzyme produced chiefly by the juxtaglomerular apparatus of the kidneys.
Scheme 1. Kinin and Renin-Angiotensin Systems of the Organism and Their Role in the Regulation of the Level of Arterial Pressure

- **Phospholipase A2**
  - Bradykinin
  - PG
  - Vasodilation
  - Increase in excretion of water and Na

- **Angiotensin I**
  - Asp-Arg-Val-Tyr-Ile-His-Pro-Phen-His-Leu
  - Vasoconstriction
  - Aldosterone
  - Retention of water and Na
  - Increase in circulating blood volume

- **Angiotensin II**
  - Asp-Arg-Val-Tyr-Ile-His-Pro-Phen
  - Vasoconstriction

- **DCP**

- **Arg-Pro-Pro-Gly-Phe-Ser-Pro-Phen-Arg**
- **Asp-Arg-Val-Tyr-Ile-His-Pro-Phen-Arg**