

DISCUSSION

J. H. GADDUM (*Cambridge, England*):

I think that Rocha e Silva's suggestion is a logical one and I would quietly have agreed with it if it had been made a few years ago. Perhaps it would be a pity to change the nomenclature just now, when we have been using the word kinin in a different way. However, I think we must give Prof. Rocha e Silva's suggestion further thought.

The term plasmakinin has been used to describe a group of active polypeptides formed from plasma which cannot be distinguished pharmacologically from one another. They are probably all identical with bradykinin, which has now been clearly defined as a nonapeptide of known structure. It is now generally accepted that when adequate tests of identity have been done, the concentration of histamine in a tissue extract can be estimated pharmacologically and the result expressed as milligramme per kilogramme; presumably the same will be true of bradykinin. There may be more than one bradykinin, just as there is more than one vasopressin. Suitable names will no doubt be chosen when the time comes.

The term kinin has also been applied to other substances, such as wasp kinin (Schachter, 1954) and hornet kinin (Bhoola *et al.*, 1960), which are similar to bradykinin, but not quite the same. Rocha e Silva suggests that it should also be applied to angiotensin and substance P. These substances are very different from bradykinin, but it would be difficult to say how different a substance may be from bradykinin and still be classified as a kinin. A simple and logical solution would be to include as kinins all the polypeptides which cause contractions of smooth muscle. There is no good reason for excluding the hypophyseal hormones. Vasopressin and substance P are both stored in granules in the axons of nerves. Vasopressin is released into the general blood stream as a true hormone; the same may perhaps be true of angiotensin, or renin.

The fact that there have been two international symposia about these active polypeptides suggests that they are a natural group, and it might be convenient to call them something briefer than "polypeptides which affect smooth muscles". If they were all called kinins, bradykinin and angiotensin would become plasmakinins, — but not substance P or the hypophyseal hormones or wasp kinin.

REFERENCES

- SCHACHTER, M.; *Brit. J. Pharmacol.* 9 325-359 (1954).
BHoola K. D., CALLE, I. D. and SCHACHTER, M.; *J. Physiol.* 151 35-36P (1960).

H. O. J. COLLIER (*Hounslow, England*):

Would not the use of the term kinin in such a widely embracing way as Dr. Gaddum suggests lead to confusion, there being several kinins from one site and several sites of production for one kinin?

C. A. KEELE (*London, England*):

Comment in response to Dr. Rocha e Silva. I would suggest that the term plasma kinin could be used to describe polypeptides formed in plasma, such as angiotensin, bradykinin, kallidin etc. Substance P would obviously belong to a different group, but all could be termed kinin hormones.

E. W. HORTON (*Beaconsfield, England*):

I do not agree with the use of the term "kinin" as Dr. Gaddum suggests. "Kinin" is used botanically in another sense. I would like to ask whether a vasodilator polypeptide lacking smooth muscle stimulating action would be classified as a kinin.

A. TELLA (*Liverpool, England*):

We found that mosquitoes which are malaria vectors produce substances which are similar pharmacologically, to wasp kinin described by Schachter. It is likely that kinins will be found in other sources including other insect vectors. In view of this, would it not be better perhaps at this stage to leave the question of nomenclature alone until more is known about these substances?

E. G. ERDÖS (*Pittsburgh, U.S.A.*):

I wish to remind this symposium of the fact that the word plasmakinin was coined by Laki in 1945 (K. Laki, The Autocatalytic Formation of Thrombin and Clotting Defect of Hemophilic Blood. *Studies from the Inst. Med. Chem. Univ. Szeged*, 35, 1945). He described a factor in blood which plays a role in converting prothrombin to thrombin. Plasmakinin is not a peptide, but a lipide.