

Editorial

When Vincent du Vigneaud isolated homocysteine in 1932, it was his intention to identify the origin of sulfur within the insulin molecule, discovered by Banting and Best in Toronto (1921). Cystine and methionine were likely candidates. However, du Vigneaud was to later recall that all of the work that led ultimately to the discovery of the transsulfuration and transmethylation pathways would not have taken place had he known that methionine was in fact not part of insulin.

Around 1960 all reactions and metabolites participating in the metabolism of methionine and homocysteine were identified and known, but clinicians only began to realize the relevance when homocysteine was first identified in the urine of children with inherited enzyme deficiencies in 1962.

A few cases of extremely rare inborn genetic defects with the common feature of hyperhomocysteinemia enabled McCully in 1968/69 to establish the hypothesis that homocysteine might have a role to play in the etiology of vascular pathologies.

The full metabolism as it is known today was published in "Science" (1964) and after another decade and with the development of more sensitive diagnostic technology and new markers and its introduction for routine use, homocysteine research began to explode and continues to be a very active field of research today. In fact it has become almost impossible to keep up with the number of daily published works.

Beyond its potential role as a major risk factor in atherothrombotic disease, homocysteine has increasingly been found to participate directly and indirectly in a large number of basic functions of cell physiology. Consequently research has expanded to new fields of interest and these promise to yield new insights and understanding in molecular pathology with important clinical implications.

In this special issue of Current Drug Metabolism the reader will find a number of selected reviews that are very closely linked to each other - by the amino acid homocysteine. My intention as guest editor is to cover some of the new fields of research that homocysteine has led the way to. The authors are dedicated researchers and much respected investigators in their own particular and very demanding fields. I am very grateful to them for their valuable contributions to this special issue. Their reviews provide current insight into homocysteine-mediated interactions with DNA-methylation, ADMA, betaine, cobalamin metabolism, renal function and oxygen radical formation. As such, they add to our understanding of the etiology and progression of diseases and serve to encourage further research.

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