

The discovery of endothelin: the power of bioassay and the role of serendipity in the discovery of endothelium-derived vasocative substances.

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# The discovery of endothelin: The power of bioassay and the role of serendipity in the discovery of endothelium-derived vasocative substances

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## Abstract

Significant discoveries in biology and medicine are rare. The progress in these fields is predominantly incremental, but sometimes new observations revolutionize the field by opening new directions in research for decades to come. Two cornerstone observations in the late 1970s and early 1980s are examples of such “revolutionary” events. The first, by Furchgott and Zawadzki, was the discovery of the “obligatory role of the endothelium in vasorelaxation by acetylcholine”. The other, by Hickey and colleagues, was the first description and characterization of a vasoconstrictor polypeptide produced by endothelial cells in culture. Both of these observations were achieved by the

application of bioassay and serendipity played an important role in each of them. They both represent starting points for rapid growth in research activity world-wide leading to the identification of EDRF as nitric oxide, and the polypeptide EDCF as endothelin a few years later. These early observations also raised interest and initiated intensive R&D activity in the pharma industry culminating in the regulatory approval and marketing of novel medicines treating human diseases. This review describes the events leading to the discovery and early characterization of the peptidergic endothelium-derived constrictor factor, and its purification, sequencing and naming it endothelin.

## Graphical abstract

Major discoveries in biology and medicine are rare. The progress in these fields is predominantly incremental, but sometimes new observations revolutionize the field by opening new directions in research for decades to come. Two cornerstone observations in the late 1970s and early 1980s are examples of such “revolutionary” events. The first, by Furchgott and Zawadzki, was the discovery of the “obligatory role of the endothelium in vasorelaxation by acetylcholine”. The other, by Hickey and colleagues, was the first description and characterization of a vasoconstrictor polypeptide produced by endothelial cells in culture. Both of these observations were achieved by the application of bioassay and serendipity played an important role in each of them. They both represent starting points for rapid growth in research activity world-wide leading to the identification of EDRF as nitric oxide, and the polypeptide EDCF as endothelin a few years later. These early observations also raised interest and initiated intensive R&D activity in the pharmaceutical industry culminating in the regulatory approval and marketing of novel medicines treating human diseases. This review describes the events leading to the discovery and early characterization of the peptidergic endothelium-derived constrictor factor and its purification, sequencing and naming it endothelin.



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## Keywords

Endothelium; EDRF; EDCF; Endothelin; NO

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