

Preliminary Investigations on Immunosensors for the Gasphase

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1 Keywords

Immunosensor, Color Comparison, Pyrethroides, Escherichia coli K-12

2 Introduction

The Drägerwerk AG is selling chemical tests for gas phase measurements which are quick and easy to handle. Today government laws and the market demand more specific and more sensitive tests. Using enzymes Dräger entered the field of biosensors by developing a highly sensitive and highly specific formaldehyde biosensor (1). This sensor allows analysis through simple color comparison. But lots of substances cannot be measured by using either enzymes or chemicals. Among them are insecticides like pyrethroids and bacteria like Escherichia coli K-12. Therefore we started to develop tests based on immunological reactions.

3 Materials and Methods

Due to the lack of the needed antibodies we chose dinitrophenol as a model for monovalent and dinitrophenol-albumine as models for polyvalent substances. We started our work establishing ELISAs in microtiter plates

4 Intended Work

On the basis of these ELISAs we are going to develop a prototype immunosensor for polyvalent substances. The Forschungsinstitut Borstel intends to develop a monoclonal antibody directed against Escherichia coli K-12. Putting prototype and the antibody together we want to gain a sensor which is useful for monitoring genetchnology laboratories.

In cooperation with the Medizinische Hochschule Lünebeck we are going to develop a sensor prototype for monovalent substances. The development of monoclonal antibodies directed against pyrethroids was started at the Gesellschaft für Biotechnologische Forschung, Braunschweig and will be finished at the Technische Universität München. Putting prototype and antibody together we intend to yield a sensor for measuring that group of insecticides in air.

References

- (1) K.-P. Rindt, S. Scholtissek, in: R. D. Schmid, F. Scheller (eds.), *Biosensors: Applications in Medicine, Environmental Protection and Process Control*; GBF Monograph 13, VCH Publishers, Weinheim 1989, 405-415.

Acknowledgement

We wish to thank the BMFT for grant 0319381A and T. Wuske for excellent technical assistance.