Contact Allergy Predictive Tests in Guinea Pigs

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Contact Allergy Predictive Tests in Guinea Pigs

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Drug Dosage
The authors and the publisher have exerted every effort to ensure that drug selection and dosage set forth in this text are in accord with current recommendations and practice at the time of publication. However, in view of ongoing research, changes in government regulations, and the constant flow of information relating
to drug therapy and drug reactions, the reader is urged to check the package insert for each drug for any change in indications and dosage and for added warnings and precautions. This is particularly important when the recommended agent is a new and/or infrequently employed drug.

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Contents

Preface...................................................................................... VII

Menné, T.; Christophersen, J. (Copenhagen): Epidemiology of Allergic Contact Sensitization ................................................................. 1
Johnson, A. W.; Goodwin, B.F.J. (Bedford): The Draize Test and Modifications .. 31
Buehler, E. V. (Cincinnati, Ohio): A Rationale for the Selection of Occlusion to Induce and Elicit Delayed Contact Hypersensitivity in the Guinea Pig. A Prospective Test ................................................................................... 39
Wahlberg, J.E.; Boman, A. (Stockholm): Guinea Pig Maximization Test ............ 59
Maguire, H.C., Jr.; Cipriano, D. (Philadelphia, Pa.): Split Adjuvant Technique ... 107
Maurer, Th. (Basel): The Optimization Test........................................... 114
Ziegler, V.; Süss, E. (Leipzig): The TINA Test................................. 172
Sato, Y. (Yokohama): Modified Guinea Pig Maximization Test ................. 193
Goodwin, B.F.J.; Johnson, A. W. (Bedford): Single Injection Adjuvant Test .... 201
Tsuchiya, S.; Kondo, M. (Tochigi); Okamoto, K.; Takase, Y. (Matsumoto): The Cumulative Contact Enhancement Test (with 4 color plates) ............... 208
Guillot, J.P.; Gonnet, J.F. (L’Arbresle): The Epicutaneous Maximization Test .... 220
Andersen, K.E. (Hellerup/Roskilde); Maibach, H.L (San Francisco, Calif.): Guinea
Preface

Why are guinea pig allergy tests widely performed? They may help to predict a risk of sensitization from new chemicals or products - if the tests are executed and interpreted properly. They are sound toxicologic tests from an economical point of view. Manufacturers can be held responsible for sensitization produced by products not properly tested. Safe products may sell better than sensitizing products. Epidemiological studies and the clinical experience indicate that contact allergy is a common nuisance, which in some patients progress to incapacitating skin disease [Cronin, 1980; Adams, 1983]. The journal of Contact Dermatitis together with the International Contact Dermatitis Research Group (ICDRG) and national research groups have contributed to the understanding and demarcation of the field of allergic contact dermatitis. The demand to avoid chemicals and products which carry a health hazard is increasing from consumer organizations, unions and governmental agencies. Allergenicity evaluation is an important part of the toxicologic profile of new chemicals and products. Draize [1959] published the first guideline for determining the allergenicity of new chemicals. The methods have been improved in the last two decades by Buehler [1965], Magnusson and Kligman [1969], Maguire and Chase [1972], Maurer et al. [1975], and Klecak et al. [1977]. The albino guinea pig has remained the animal of choice [Stevens, 1967]. Through the standardization of the test methods and the increased experience obtained, the allergy tests have become more predictive of the potential health hazard of substances tested.

Simultaneously, it became clear that the technology varies from laboratory to laboratory and the experience in choice of concentrations, vehicles, reading, controls and interpretation vary widely.

Preface VIII

The publication of methodological reviews, e.g. Klecak [1983], Maurer [1983] and Andersen [1983], with discussion of test pitfalls probably diminished the test result variation between laboratories. Interpretation and execution still require skill and experience.

The purpose of this book is twofold: to present the advantages and limitations of the different test methods as viewed from experienced investigators, who have compiled much data using their favorite technique, and
to present as much detailed test data on specific chemicals and products as
the authors are free to publish.
We hope that the basic documentation presented here will allow others
to make additional progress in the field. We are thankful for the cooperation
provided by the co-authors.

References

Andersen, K.E.: Predictive skin and mucosa testing methods; in Allergic responses and
hypersensitivities induced by chemicals, pp. 243-275 (WHO/CEC, Copenhagen/Luxembourg
1983).
Cronin, E.: Contact dermatitis (Churchill Livingstone, Edinburgh 1980).
Draize, J.H.: Intracutaneous sensitization test in guinea pigs; in Appraisal of the safety of
chemicals in foods, drugs and cosmetics. Ass. of Food and Drug Officials of the
United States, pp. 46-59 (Texas State Department of Health, Austin, 1959).
Klecak, G.: Identification of contact allergens: Predictive tests in animals: in Marzulli,
Klecak, G.; Geleick, H.; Frey, J. R.: Screening of fragrance materials for allergenicity in the
guinea pig. I. Comparison of four testing methods. J. Soc. cosmet. Chem. 28: 53-64
Maguire, H. C. Chase, M. W.: Studies on the sensitization of animals with simple chemical
Maurer, T.: Contact and photocontact allergens (Dekker, New York, 1983).
A method for the predictive evaluation of the contact allergenicity of chemicals.
Stevens, M.A.: Use of the albino guinea-pig to detect the skin-sensitizing ability of