

PROCEEDINGS

COMMUNICATIONS

GESELLSCHAFTSVERHANDLUNGEN

BRITISH ASSOCIATION OF ALLERGISTS

A General Meeting of the British Association of Allergists was held in the Lecture Theatre, The Wright-Fleming Institute, St. Mary's Hospital, on Saturday, 23rd October 1954.

Dr. J. Freeman gave a talk on the "Mass Experiments on Pollens During 1949-54". He was followed by Dr. J. Pepys on the "Relationships of Specific and Non-Specific Factors in the Tuberculin Reaction".

In the afternoon papers were by Dr. G. A. Rose, "Recent Observations on Polyarteritis", and Mrs. R. Augustin on "Enzymatic Activities of Grass Pollen Proteins in Relation to Skin Reactivity and Standardisation".

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MASS EXPERIMENTS ON POLLENS DURING 1949-54 *by J. FREEMAN*

In 1949-50 a statistical investigation was made on the effect of "a visit to America" in sensitising people to Ambrosia Pollen. The results showed a distinct increase of sensitivity amongst those who had been to America but the results were suspect because so few of the hay fever patients concerned had been to America, and also because it was impossible to define what would be an effective visit.

Bermuda grass pollen having been guaranteed by American allergists to differ markedly from English grass pollens, researches on the point were made in 1951 and 1954.

It was found that while some few people gave a stronger reaction to Bermuda pollen than to the English Pollaccine (Timothy and Cocksfoot grass pollens) yet there were all degrees of agreement or disagreement. About half the people tested either gave a minute response to Bermuda or gave none at all.

On the other hand Pollaccine as a desensitising vaccine was just as effective in diminishing the Bermuda reactions (where they existed) as in reducing the weals produced by Pollaccine which every English hay fever patient shows.

This point was emphasised in the case of a youth who reacted to Bermuda but not to Pollaccine, a peculiarity which had been discovered accidentally. He was given a desensitizing course with Pollaccine and the Bermuda response disappeared in consequence. On further enquiry the boy lived the first 5 years of his life in Johore, where Bermuda would be the prevailing grass, and this must presumably have affected the boy's sensitivity.

Conclusion. Bermuda pollen would be a very poor diagnostic for English hay fever and the English Pollaccine would be a perfectly good desensitizer for any sensitivity to Bermuda grass should this be showing symptoms.

In 1952 one more attempt was made to see whether the pollens of Cocksfoot, Timothy and Fescue showed any difference diagnostically or when acting as a desensitising vaccine.

Every hay fever case was tested to extracts of these three pollens as well as to Pollaccine. In no case was there any failure to react. Any one of these extracts could have been used as an accurate diagnostic of hay fever in any one of those patients.

Similarly any one of those extracts could be used as an effective desensitizer with any one of those patients. There was in short no *practical* difference between those three pollens or of the mixed extract which we call Pollaccine.

RELATIONSHIP OF SPECIFIC AND NON-SPECIFIC FACTORS IN THE TUBERCULIN REACTION *by* Dr. J. PEPYS

In the investigations of antigen-antibody relationships in the initiation of the tuberculin reaction, it was observed that both antigen and antibody are subject to modifications of a non-specific and specific nature, which in turn influence the reactions obtained. These mechan-

isms should be considered in evaluating the influence of other agents on tuberculin reactions.

1. *Antigen.* (a) In man, the local persistence of tuberculin is influenced by lymphatic absorption. Where absorption is decreased, reactions are enhanced and vice versa. Local injection of histamine and adrenaline were used to demonstrate this phenomenon.

(b) "Fixation" of the tuberculin appears to commence within the first ten minutes after injection and is completed for a moderate dose of tuberculin within 1-2 hours. These times were arrived at by studying the modified reactions resulting from the superinjection of saline, hyaluronidase and histamine into Mantoux tests.

(c) Tuberculo-protein excites an immediate reaction on injection into sensitive guinea pigs and rabbits, which is manifested as an increase in capillary permeability.

2. *Antibody.* (a) Reactions to tuberculin are inhibited in sensitive animals, by agents which reduce lymphoid tissue and circulating lymphocytes non-specifically, as by X-rays, or specifically, as by the injection of tuberculo-protein.

(b) Adequate antihistaminic treatment inhibits tuberculin reactions in guinea pigs, by modifying vascular responses in a non-specific manner.

(c) Local passive transfer tests with homologous circulating white cells or macrophages gave positive reactions in animals in which inhibition had been produced as an (a) and (b). This suggests that the inhibitory agents have modified the number or availability of circulating white blood cells and especially circulating lymphocytes and therefore modified the source of reacting antibody concerned in the initiation of the reaction.

(d) Tuberculin reactions were obtained in rabbits treated with nitrogen mustard, so as to deprive them of their circulating neutrophil cells, thus indicating that these cells are not essential for the initiation of the reaction.

(e) In man the injection of adrenaline into Mantoux tests inhibited the reactions, and this was associated with a decrease in the infiltration of circulating white blood cells. It is suggested that the absence of circulating lymphocytes is responsible for the inhibition.

3. It is suggested that the time required for the arrival of sufficient numbers of antibody-carrying lymphocytes to combine with the antigen and thus to excite an inflammatory response, may be one of the reasons for the delayed nature of the reaction.

RECENT OBSERVATION ON POLYARTERITIS NODOSA *by* G. A. ROSE

In a recent survey for the Medical Research Council a study was made of the clinical and pathological data from 117 proven cases of polyarteritis nodosa. There was evidence that the number of cases diagnosed during the past 8 years has increased, especially among the elderly.

The disease is unexpectedly frequent among patients with rheumatoid arthritis, rheumatic heart disease, and acute or chronic respiratory infections (and their treatments): this relationship may be of aetiological significance. There is little positive evidence for attributing the disease to drug hypersensitivity, except for a very few cases apparently related to thiouracil therapy.

Of 20 consecutive cases proven in life and not treated with cortisone or corticotrophin (the duration of follow-up varying from 3 to 11 years), 14 cases died, 3 remitted, and in 3 the disease is still active; only 1 case with renal lesions survived.

ENZYMATIC ACTIVITIES OF GRASS POLLEN PROTEINS IN
RELATION TO SKIN REACTIVITY AND STANDARDISATION

by R. AUGUSTIN and B. J. HAYWARD

By skin tests in allergic subjects the whole of the activity of grass pollen extracts is found in the protein fraction (Augustin 1953 b). In a controlled clinical trial the main protein fraction (still giving two lines in gel diffusion tests) proved to be as active as whole extract. (Frankland and Augustin 1954). Yet we still do not know how much clinically inert material is associated with any of our purified protein fractions. Quantitative assay methods for individual protein entities have therefore been devised.

The gel diffusion technique (Augustin 1953 a) has been developed further. It is now possible to measure the main protein component (fraction B) of a 10 % (w/v) grass pollen extract ('Pollaccine' 100,000) at a dilution of 1/128, i.e. at the equivalent of 800 Noon units, with a precision of $\pm 5\%$ for 5 estimations. As little as the equivalent of 400 Noon units/ml. still gives a discernible diffusion line, but this quantity cannot be measured with the same degree of accuracy. The other protein components may be assayed by the same method.

In an endeavour to find other quantitative criteria for the resolution and assay of the active protein mixture we have examined some

Influence of pH, heat and ageing on activities of pollen extracts.

Storage Conditions		% of initial activity remaining, as measured by		
Temp. °C	pH	Skin tests (Standard error about $\pm 50\%$)	Phosphatase tests (standard error about $\pm 10\%$)	Gel diffusion test (standard error $\pm 5\%$ for 5 estimations)
37	neutral	no change at 7 days	50 at 45 hr. 25 at 7 days	no change at 7 days
18	3.8	50 at 30 min.	some reduction at 30 mins.	some reduction at 30 mins.
37	3.8	< 10 at 45 hr.	< 10 at 45-66 hr.	10 at 21-45 hr.
37	8.8	no change at 21 hr. < 10 at 45 hr.	< 20 at 21 hr. < 10 at 45 hr.	no change at 66 hr. 70 at 1 week
100	neutral	90 at 15 min. < 5 at 30 min.	none at 5 min.	none at 1 min.
Storage at room temp.	neutral	no change for almost 2 yrs. < 10 at 3-4 yrs. < 1 at 5-6 yrs.	no change for 2 yrs. 10 at 6 yrs. or more	no change for 2 yrs., then diffusion lines become less distinct although the diffusion end point never falls below 25% of the original value in 7 yrs.

of the enzymatic activities of grass pollen extracts. Timothy and cocksfoot pollen extracts shew high phosphatase activities and contain amylase. There is little, if any, proteinase activity with gelatin as a substrate and hardly any glucuronidase activity.

It is possible that one of the allergens in the main protein fraction (B) may, in fact, be a phosphatase; but one skin reactive carbohydrate rich protein (fraction A) which was electrophoretically homogeneous (pH 7.4) and gave only 1 diffusion line (against third course rabbit antisera to whole pollen extracts) proved to be devoid of phosphatase activity. Fraction A was uncontaminated with B and vice versa.

The behaviour of crude extracts during storage and heating at various pH values has been examined by the 3 methods, i.e. the pollen proteins have been tested for their capacity to react with precipitating

antibodies produced in rabbits (to whole pollen extract, diffusion test), their acid phosphatase activity and their ability to react with reagins in the skin. The results are summarized in the accompanying table and were discussed.

REFERENCES

- Augustin, R.*: Acta Allergol. 6, 334, 1953 a.
- Biochem. J. 54, proc. X, 1953 b.
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