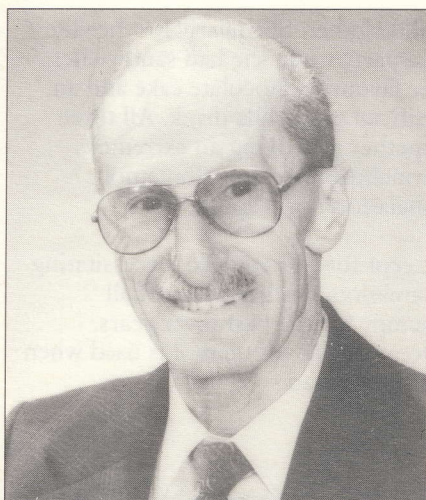


Asthma and Foods in 6 Patients

– Dr G Borok



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Curriculum vitae

Dr Borok has been in both rural and urban family practice for 35 years. In 1983, after reading Dr M Mandell's book "5 Day allergy relief system", he went to America to learn the techniques used by Mandell in his clinic in Norwalk Connecticut. For the last 5 years he has used an elimination programme to research the relief of irritable bowel syndrome and all chronic symptoms of all systems of the body, associated with the removal of foods from patients. He had read papers and presented posters on foods in relation to moods, asthma, migraine, IBS, hypertension and behaviour at various congresses. He held a part time appointment at the post coronary rehabilitation programme at the Sports Research Centre, University of Pretoria for 12 years. He has 5 publications to his name.

Summary

Ten patients with exercise-induced asthma were placed on an elimination program of inhalants, skin applications and foods to identify any triggers which were associated with bronchospasm. After removing these triggers the patients showed a significant increase of lung function without bronchospasm on exercise. The outcome of those patients who could be traced 1-2 years later, is given, and their treatment, especially their dietary and exercise tests, explained. These findings are compared with findings of other researchers world-wide.

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KEYWORDS:

Asthma; Diet; Hypersensitivity.

Introduction

10 patients with exercise induced asthma were placed on an elimination programme of inhalants, skin applications and foods to identify any triggers that were associated with bronchospasm. After removal of the triggers identified by the programme, the ten patients showed a significant increase of lung function without bronchospasm on exercise. On exposure to triggers in the laboratory, significant bronchospasm was provoked. Six patients who were traced 1-2 years later had significant increase in lung function. Five who avoided triggers had no significant exercise induced asthma. On exposure to triggers at this stage no significant bronchospasm was produced.

Methodology

Ten patients with chronic asthma

were put onto an elimination programme (EP) to identify substances inhaled, absorbed via the skin or eaten that were associated with provocation of bronchospasm. The EP consisted of eliminating environmental factors such as all perfumes, sprays, pets and house dust. The subjects could use only non scented toiletries and cosmetics. Boiled, soda or mineral water was the only fluid allowed. Only one type of grain, fruit, vegetable or protein was eaten per day. One or two items of food were allowed per meal but could not be repeated in the same week. Salt was the only condiment allowed.

At the outset lung function was recorded on a cavetron before and after exercise at the Sports Research Institute laboratory, University of Pretoria. A 15-20% reduction of forced expiratory volume in 1 second (FEV₁) after a workload at 85% maximum work capacity indicated exercise induced asthma (EIA) according to Jones.¹

Lung function was recorded again, before and after exercise, one or two months later on the EP to demonstrate any relief of EIA. Patients were then re-exposed to offending inhalants or foods identified by the EP, to confirm their association with bronchospasm in the laboratory.

Follow up three to twenty six months later: six patients were traced and lung function was tested on a plethysmograph at the lung function unit of the HF Verwoerd Hospital. The six patients underwent the same routine, showing improvement of lung function before and after exercise associated with the removal of triggers in foods and inhalants over the two years and the worsening

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of lung function on exposure to triggers are reported.

Patient 1

A 37 year old female patient suffered from recurrent colds, post nasal drip, sinusitis and headaches all her life. Distension, colic and flatulence were ever present. Asthma bothered her for 16 years, necessitating hospitalisation on numerous occasions. Therapy over the past 10 years comprised:

- meticorten mg 5 B D continuously.
- aminophylline suppositories B D.
- salbutamol spray inhalation 8-12 times a day prior to trial.

Favourite food or inhalants are often the culprits!

Her IgE level was 44 IU.

Skin scratch tests:

- Dog dander - ve
- Maize extract +
- Bermuda grass +++.

Exercise Induced Asthma

At start of trial her FEV₁ decreased by 34% after two minutes exercise at 135 W, diagnostic of EIA as seen in Fig 1.

Avoiding two inhalants: "Spray 'n cook" and dog dander; and four foods: apples, white bread, artificial orange and granadilla cold drinks (identified by the EP) her lung function improved. After only eight weeks on the EP her FEV₁ increased

by 8% before exercise and decreased by only 9% after exercise of 135W, indicating no EIA.

After eating 3 bread rolls in the laboratory, bronchospasm was noted by a 13% reduction of FEV₁ without exercise.

The bronchospasm was relieved by inhaling salbutamol.

Though maize showed + positive on skin scratch testing, mealies or mealie meal did not affect her.

Twenty five months later her FEV₁ increased by 14% before exercise and 13% after exercise. On re-exposure to bread and orange drink her FEV₁ had improved by 14% compared to two years previously.

This patient is addicted to wheat and eats bread knowing the salbutamol

will help her. She nearly lost her life at a party when she had sandwiches, her favourite chocolate cake and an artificial granadilla drink. All three together provoking an extreme bronchospasm, the salbutamol inhalation not helping.

Except for this episode, necessitating admission, she has been off all therapy for the past three years. Occasionally salbutamol is used when she eats bread.

Patient 2

A 27 year old female who suffered from urticaria and hayfever most her life and asthma for ten years, especially at horse shows which she loved. She had a positive IgE to horse hair. Stroking of horses outside the laboratory brought on an acute attack of urticaria but no asthma. She was a heavy smoker, 25 cigarettes a day.

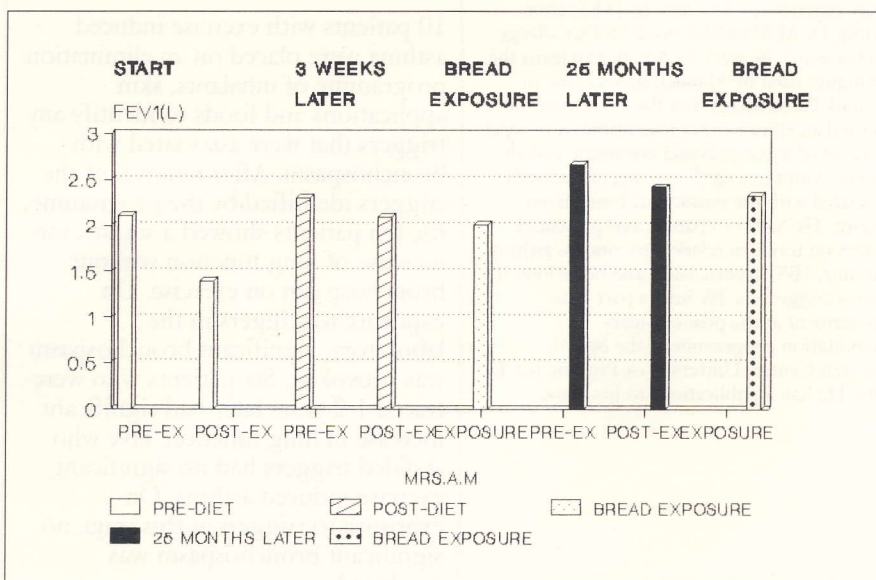


Fig 1. Showing lung function, FEV₁ in litres before (pre X) and after exercise (post X); a) initially, blank columns b) after 3 weeks diet, black columns. c) exposure to bread, light dotted pattern. d) 25 months later hatched pattern. e) after exposure to bread again, heavy dotted pattern.

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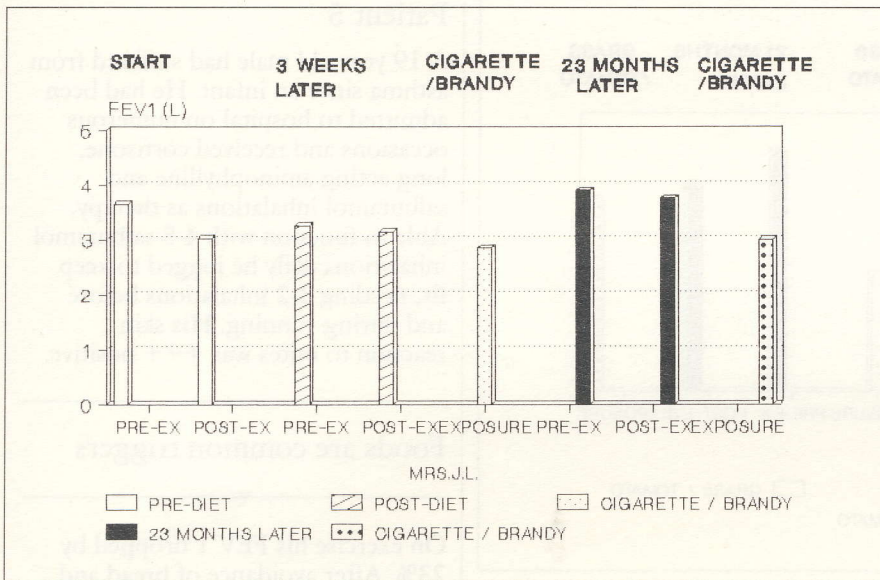


Fig 2. The same as Fig 1 except the exposure is brandy balls and cigarettes. Though IgE positive to horse hair, exposure lead to severe urticaria and not asthma.

She used salbutamol inhalations, average 5-6 times a day. The EP revealed the trigger of her asthma was passive cigarette inhalation. Removal of this factor led to relief of EIA and a 20% reduction of FEV 1 on exposure to cigarette smoke in the laboratory. She smoked intermittently but had stopped for 3 months prior to testing 2 years later at the lung function unit. In the interim she found out she reacted to brandy balls. On exposure to both brandy balls and passive cigarette smoke, though she produced a 33% reduction of FEV 1, the FEV 1 was higher than exposure alone to cigarette smoke, 2 years previously. See Fig 2.

Patient 3

A 26 year old female suffered all her life from nasal symptoms and asthma, especially early morning, the so-called early morning dipping. She was on Cortisone inhalations, long acting

aminophylline and salbutamol inhalations continually for three years.

Investigations

IgE 235 IU.

Skin scratch tests: mites +++, grass +++++.

Her favourite foods, Worcestershire Sauce (which she poured over most of her foods) and fruit salad yoghurt (no other flavours of yoghurt affected her) were found to be the triggers of her asthma causing a 20% reduction of FEV 1. Removal of house dust mite relieved her of early morning wheezing.

Two years later on re-exposure to Worcestershire Sauce and fruit salad yoghurt her FEV 1 showed no decrease but actually increased by 25%. She remained symptom free without any treatment as she totally avoided the triggers. The house dust mites being starved by spraying her bedroom contents with a commercial barrier spray. See Fig 3.

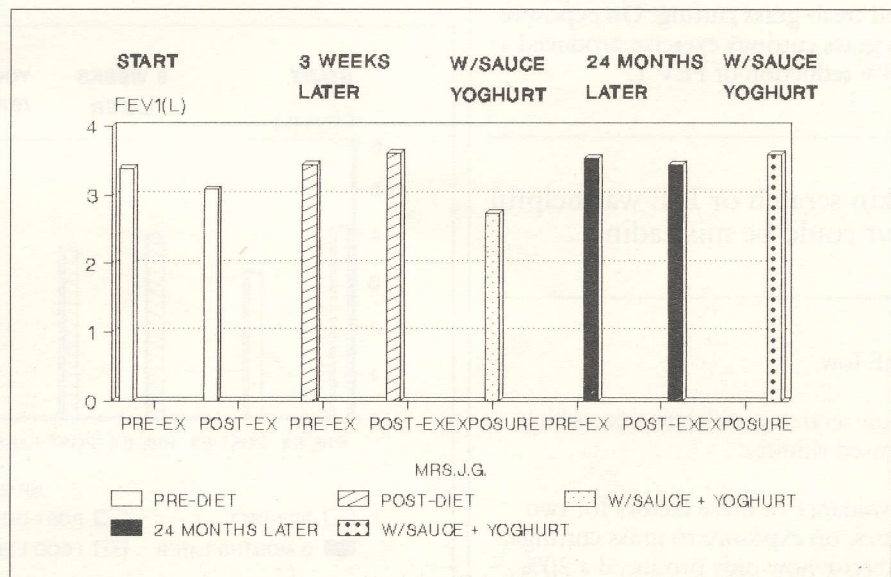


Fig 3. The same as Fig 1 except the exposure is Worcestershire sauce and fruit salad yoghurt.

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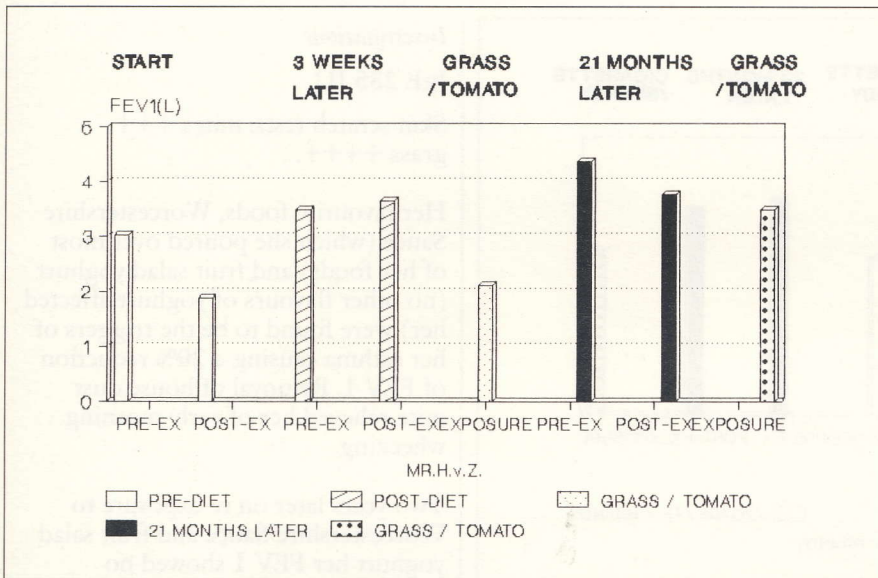


Fig 4. The same as Fig 1 except exposure is freshly cut grass, mushroom sauce, tomato and cold drink.

Patient 4

A 35 year old male was using 9-10 salbutamol inhalations daily. The EP revealed he reacted to mushroom sauce, tomatoes, cordials, ice cream and fresh grass cutting. On exposure to grass cuttings exercise produced a 38% reduction of FEV 1.

Skin scratch or IgE was helpful but could be misleading

IgE low.

Skin scratch positive to mite which caused rhinitis.

Avoidance of these factors for two years, on exposure to grass cuttings, exercise now only produced a 20% reduction of FEV 1. The FEV 1 now being 1,38 litres higher.

Reduction of FEV 1 after only 3 weeks on the EP on re-exposure was 38%. See Fig 4.

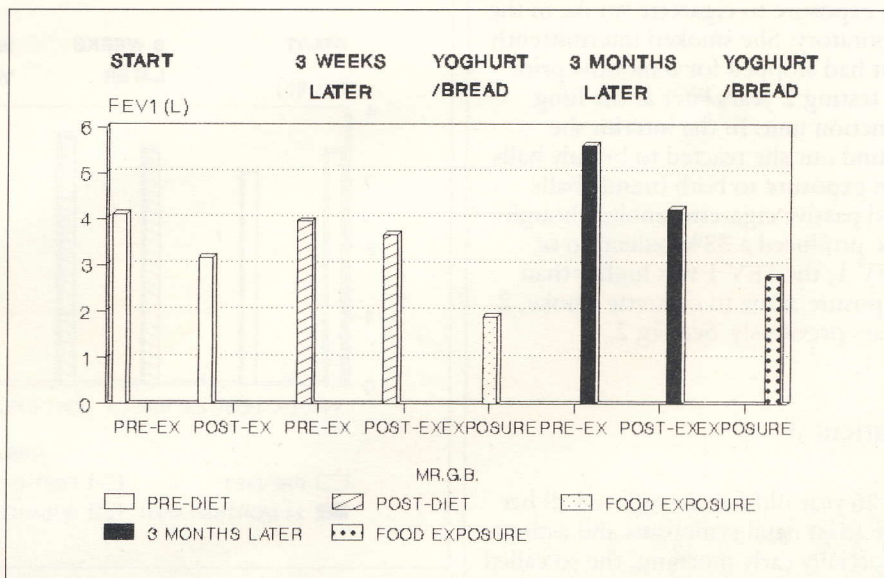


Fig 5. The same as Fig 1 except exposure is bread and yoghurt.

Patient 5

A 19 year old male had suffered from asthma since an infant. He had been admitted to hospital on numerous occasions and received cortisone, long acting aminophylline and salbutamol inhalations as therapy. Able to function with 4-5 salbutamol inhalations daily he jogged to keep fit, needing 1-2 inhalations before and during running. His skin reaction to mites was +++ positive.

Foods are common triggers

On exercise his FEV 1 dropped by 23%. After avoidance of bread and yoghurt his FEV 1 only dropped by 7% after four weeks. On re-exposure to yoghurt and bread three months later FEV 1 improvement was 31% without salbutamol. Early morning wheezing disappeared after spraying his bedroom with a barrier spray. See Fig 5.

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Patient 6

A 38 year old female, a non smoker, had sinusitis and asthma for twenty years. At the start of the trial she was on:

- Cortisone: i) orally alternate days
ii) inhaled, 3 times daily.
- Long acting aminophylline, twice daily.
- 4-5 salbutamol inhalations a day.

After the EP her initial FEV₁ (drop of 34% on exercise) improved by 46% after exercise.

On exposure to wine the FEV₁ dropped by 41%. Two years later her FEV₁ before exercise, though 16% better, still showed the same 37% reduction on exposure to wine despite having had sodium cromoglycolate, long acting aminophylline and salbutamol inhalation, which she usually took, half an hour before the test. She

would not forgo her wine at night and opted for therapy. See Fig 6.

Results

At the start of the trial the six patients showed a significant reduction of FEV₁ (95% lower confidence limit) of 0,41 litres (L) after exercise at 85% of maximum work capacity, indicating EIA. After three to ten weeks on the EP there was a significant improvement of FEV₁ of 0,19 L before exercise and of 0,31 L after exercise, indicating no EIA.

Directly after this exercise on exposure to offending triggers the six patients showed a significant reduction of FEV₁ of 0,56 L indicating asthma.

Three to twenty five months later the five patients who avoided offending inhalants and foods had a higher FEV₁ after exposure to offending

triggers, except one, who still drank wine. After exercise alone, no significant reduction of FEV₁ was observed.

Discussion

The relief of the asthma in the six patients was associated with the removal of certain inhalants and foods, which confirms the work of Kaplan,² Lessof³ and Wilson⁴. The inhalants the patients were exposed to in the laboratory were passive cigarette smoke and freshly cut grass. Removal of house dust mites, though not shown in laboratory played a clinical role. The six foods associated with FEV₁ reduction in the laboratory (bread, brandy, yoghurt, wine, Worcestershire Sauce and mushroom sauce), have a fermentation process involved in their manufacture.

Other foods such as apple, ice cream, tomatoes and cold drinks were involved. In total 13 different foods and 7 inhalants were involved, a ratio of two foods to one inhalant. This is the same as the author's experience in 50 asthmatic cases, where symptoms improved in nine cases and were relieved in 37 cases. Asthma was provoked in 62% of cases by foods, 32% by a combination of foods and inhalants and only 6% due to inhalants alone.⁵

In five out of six cases the asthma was provoked by the patient's favourite foods or inhalant in addition to environmental factors. The favourite foods are most often eaten, aggravating the situation, but even worse, some are addicted to these foods and cannot let them go⁶ as occurred in two patients.

Two years later three patients who had abstained from exposure to

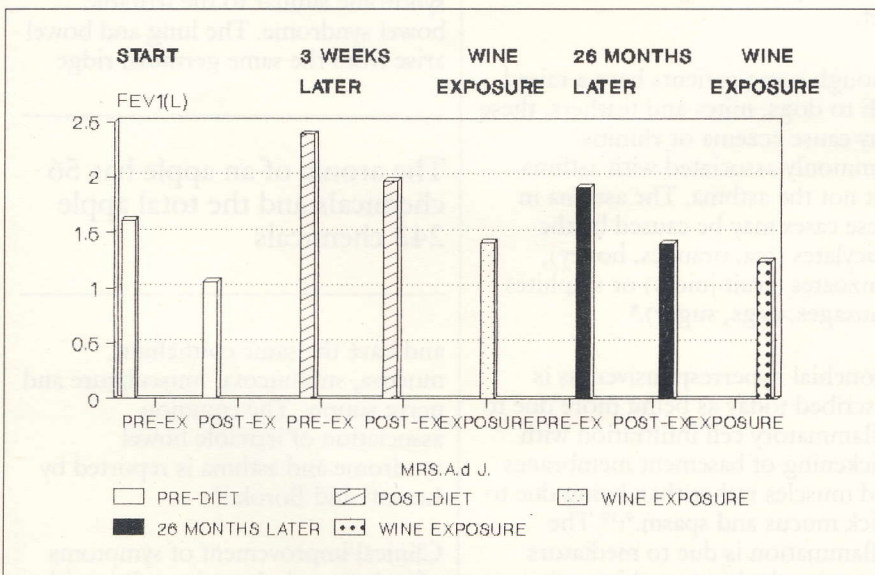


Fig 6. The same as Fig 1 except the exposure is wine.

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triggers had significant improvement of FEV 1 after exercise and exposure to offending foods, and had no EIA.

The two patients who partially abstained from exposure to offending foods had insignificant EIA and a smaller decrease of FEV 1 on exposure to offending foods without therapy, except when they transgressed. After two years the one patient who preferred treatment rather than give up her wine still had EIA and bronchospasm on exposure despite full treatment of cromoglycolate, aminophylline and salbutamol inhalation half an hour before the test as part of her regular daily dosage. All four patients who were on cortisone before the EP did not need it afterwards. The longer the patients avoided the offending foods, the less the bronchospasm induced by exercise, inhalant or food. It is suggested that this may be due to the inflammatory reaction having subsided after removal of the irritating chemicals in triggers.

Skin scratch or IgE testing was helpful but could be misleading. Two patients with early morning wheezing had +++ positive skin scratch test to house dust mite. The early morning

... and she remained symptom free without any treatment as she totally avoided the triggers

wheezing was relieved by spraying the bedroom contents with Bayer's anti-mite spray. It is suggested that bedroom contents and vapours such as plants, pillows, perfumes and mites are responsible for early morning dipping and not necessarily low dose of therapy at that time when exposure is at its height.

In this trial one patient who had raised positive skin scratch test to maize did not react to mealies. She developed asthma on exposure to her dog but the skin scratch test to dog hair was negative. The +++ positive skin scratch test to horses was the cause of urticaria and not asthma in a second patient. Lessof et al found that five patients with milk

All six patients showed significant improvement after 3-10 weeks on the elimination programme

intolerance with asthmatic episodes had IgE values less than 40u/ml to milk.³

Various reports by Mandell,⁶ British Nutrition Foundation,⁷ Lessof et al,³ and Allen et al,⁸ have shown relief of asthma by removing foods from the diet.

Though some patients have a raised IgE to dogs, mites and feathers, these may cause eczema or rhinitis commonly associated with asthma but not the asthma. The asthma in these cases may be caused by the salicylates (tea, oranges, honey), benzoates (fruit juices) or sulphites (sausages, eggs, sugar).⁸

Bronchial hyperresponsiveness is described today as being more due to inflammatory cell infiltration with thickening of basement membranes and muscles rather than being due to thick mucus and spasm.^{9,10} The inflammation is due to mediators histamine, leukotrienes, kinins, prostaglandins and chemotactic

factors released by T cells, leucocytes and mast cells.¹¹

Apples provoked asthma in the first case. The aroma of apple has 56 chemicals and the total apple 243 chemicals.¹² The chemicals may be inhaled whilst in the mouth, absorbed sublingually or via the gastro-intestinal tract to reach the mast cells in the bronchi.

Allen⁸ has provoked asthma by exposing patients to chemicals hidden in capsules, such as salicylates, benzoates, and amines such as monosodium glutamate, the sodium salt of glutamic acid, a non essential amino acid, which he extracted from foods.

It is suggested that our concept of asthma should move away from the accepted auto-immune reaction to allergens which release mediators causing the inflammatory reaction, to one where this reaction is due to irritation by chemicals in foods and inhalants. The irritable lung syndrome similar to the irritable bowel syndrome. The lung and bowel arise from the same germinal ridge

The aroma of an apple has 56 chemicals and the total apple 243 chemicals

and have the same epithelium, mucosa, submucosa, musculature and nerve supply. The common association of irritable bowel syndrome and asthma is reported by Lessof³ and Borok.¹³

Clinical improvement of symptoms of asthma and ulcerative colitis with histological improvement of

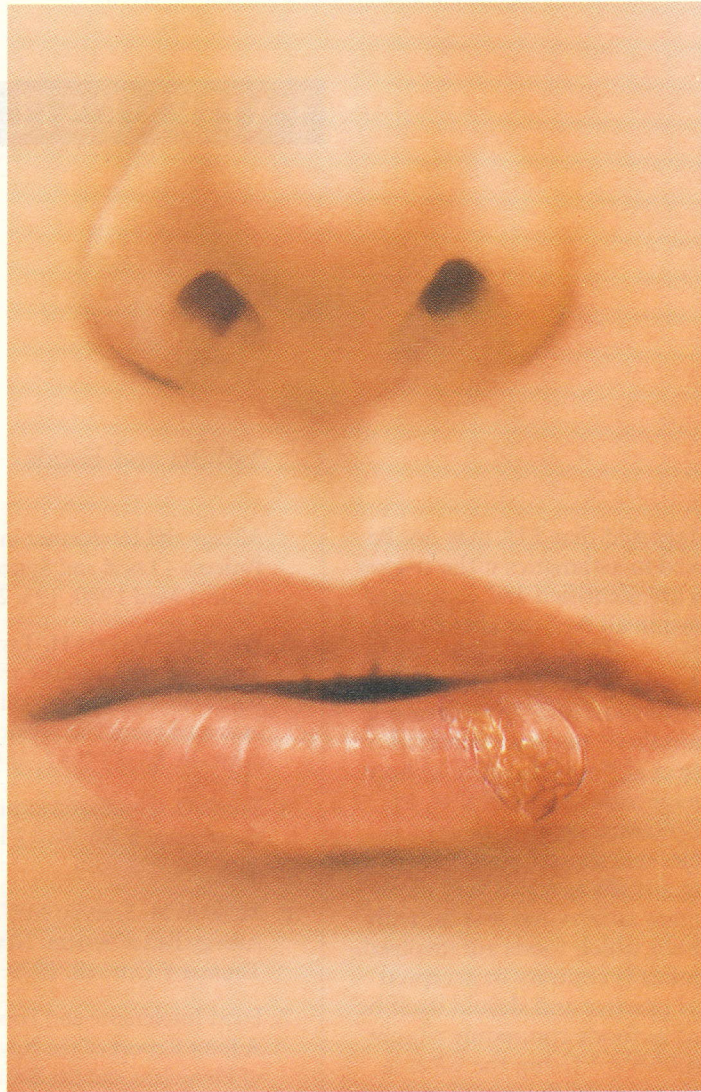
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inflammatory reaction of the bowel has been described by Borok,¹⁴ the lung inflammatory reaction improving as well, is assumed.

The significant increase in FEV₁ in all six patients after avoiding offending foods for three to twenty five months confirms this view. It is suggested that the inflammatory reaction of the bronchi resolved as the irritant effect of chemicals was avoided. It is further suggested that histamine, prostaglandins, benzoate, salicylate and sulphites present in foods⁸ themselves are the mediators that may elicit hyperresponsiveness and not necessarily released from mast cells of the patients by triggers.

Some foods contain xanthines, caffeine (coffee), theophylline (tea) and theobromine (chocolate) which are bronchodilators. Other foods contain histamine, dopamine, acetylcholine, prostaglandins and leukotrienes (honey, milk, beef, tomato and walnut) which are bronchoconstrictors.⁸ Depending on what was eaten at the last meal, so the severity of the asthma waxes and wanes.

Anaphylactic death from foods is continually being described.¹⁵ Patient I reacted to 4 foods and 2 inhalants. One patient reacted to 28 different inhalants, skin applications and foods.¹² It is suggested that individual asthmatics react proportionately to the various triggers. Patient I reacted to dogs, spray 'n cook, bread, apples, orange and granadilla drinks. If she had apples only for a meal the attack would not be so bad. But if she ate a sandwich with egg fried in a pan with spray 'n cook, apples, and washed it down with an orange drink while her dog sat on her lap she would be admitted to hospital, as happened to her one afternoon.



Ignore a cold sore for long enough,
and it comes back again...

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It is suggested that EIA may not be produced in asthmatics if the trigger factors are identified and eliminated as shown in all 6 of the above cases.

Despite a large number of available treatments morbidity¹⁶ is increasing and mortality¹⁷ has not decreased. Warner et al,¹⁸ in a directive of how to manage asthma, stated that, as simple pharmacological therapy is available, one should ignore foods as causing asthma as foods very rarely precipitate asthma and it is difficult to identify which foods are involved. This policy is contrary to accepted medical practice and should itself be ignored as foods commonly trigger asthma.^{2,3,4,5,6,8} Using the EP it is possible to establish which foods are associated with provoking asthma, even in children, from breast babies to teenagers, with the help of the mother.⁵

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