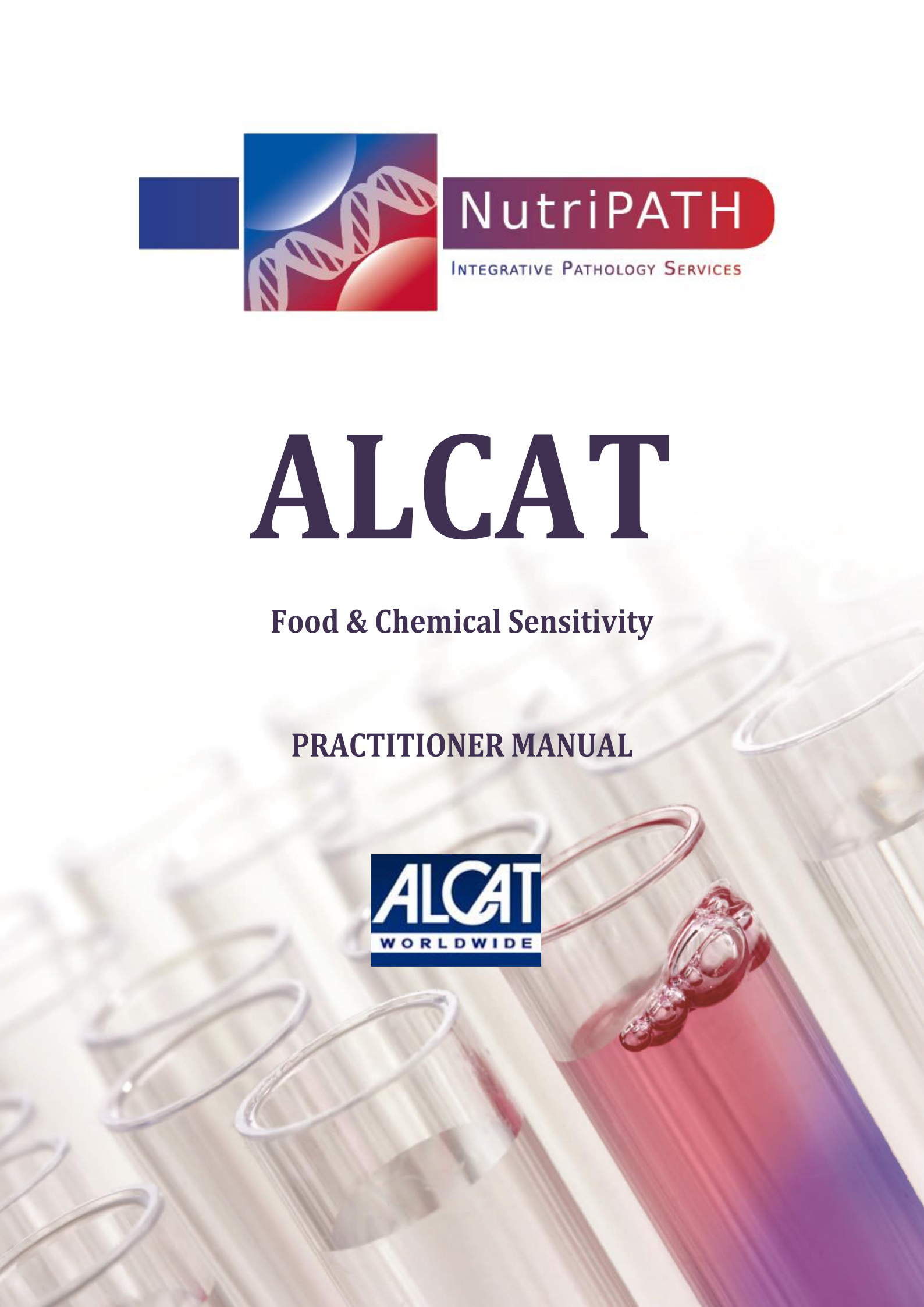
NutriPATH

INTEGRATIVE PATHOLOGY SERVICES

ALCAT

Food & Chemical Sensitivity

PRACTITIONER MANUAL



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ALCAT Food & Chemical Sensitivity

"Let thy food by thy medicine and thy medicine be thy food"
- Hippocrates

And remember…..

"What is food for one man may be bitter poison to others"
– Lucretius

The ALCAT (antigen leukocyte cellular antibody test) was developed to measure personalised nutrition at the cellular level. The core technology is a blood test that measures the body's cellular response to challenges from a wide array of substances including various foods, additives, colouring, chemicals, functional foods and medicinal herbs. The individual's cellular reactivity after exposure of the blood to the various test agents, versus the person's own baseline control, tells the healthcare provider which substances may be causing a sensitivity related response in the body.[1] Following testing, a 4 day rotational plan is recommended to the patient.

The ALCAT test has been validated by demonstrating a high correlation with double-blind oral challenges with both foods and food additives.[2] In addition a controlled study from Baylor Medical College reported 98% success for weight loss and/or improvement in body composition from patients that followed the recommended ALCAT rotational plan, an unparalleled achievement.[3]

The ALCAT test is a simple blood test that can be used to identify food and other factors that induce innate immune system activation. It measures changes in size and volume of white blood cells in response to ex vivo challenges with foods, chemicals and other environmental stimuli.

The ALCAT test is NOT an allergy or IgE test. The ALCAT is the most effective and comprehensive sensitivity/intolerance test available.

The advantage of the ALCAT involves the identification of specific foods that are triggering an inflammatory cascade. The identification of these specific foods works synergistically with the thesis that gut health is one of the primary and crucial organs responsible for chronic inflammatory states, whereby the etiology of the vast majority of chronic inflammatory or autoimmune conditions can be traced back through a series of mechanisms to delayed food hypersensitivity via impaired intestinal permeability (so called 'leaky gut').

ALCAT Key Points

- Unique method for testing an individual's cellular response to foods, chemicals and moulds.
- Whole blood test that detects delayed sensitivities or intolerances.
- Measures delayed reaction over the course of several hours after exposure.
- Measure changes in size/volume of white blood cells.
- Indication of cellular inflammatory response.
- Delayed sensitivities/intolerances are not IgE mediated.

ALLERGY	INTOLERANCE
Specific immunity	**Innate immunity**
Immediate symptom onset	**Delayed symptom onset**
Usually IgE mediated mast cells/basophils	**Gut integrity**
Genetic / Exposure related	**Genetic / Exposure related**
N/A	**Liver detoxification capabilities**
N/A	**Enzyme insufficiency**

The ALCAT test method, which has been utilized successfully for over twenty years for food intolerance, also offers significant promise as an integrated functional assessment tool of specific micronutrient deficiencies.

Use of this laboratory methodology will help clinicians identify foods and other substances that are incompatible with an individual's genotype and phenotype, as well as nutrient factors beneficial for enhanced immune function.

Use of the ALCAT Test

A tremendous amount of health problems have been linked to food sensitivity and chronic inflammation – common everyday problems like migraines, aching joints, fatigue, gastrointestinal disorders, eczema, hyperactivity/ADD, asthma and even obesity.

It has been found that overweight subjects following an eating plan eliminating foods suspected of activating innate immunity, based on laboratory analysis of whole blood samples, experienced a significant improvement in body composition and scale weight.

The effect of immune activating foods was distinct from that of caloric restriction, as a well matched control group that followed a calorie restricted diet was included in the study. The report (Kaats) states: "80% of the subjects in the experimental group lowered their body fat during the study compared to 34% in the control group. 78% of the experimental group achieved an improvement in their body composition compare to 29% in the control group…and 98% of the subjects following the ALCAT plan either lost scale weight or improved their body composition."

Professor Cabo-Soler, Chief of Biochemistry at University of Valencia reported in 1995 that iso-caloric food elimination diets, based on ALCAT test results, promoted enhanced weight loss, comprised more of adipose tissue rather than muscle mass as determined by DEXA studies. One plausible interpretation of these data is that altered immune system reactions to the preponderance of artificial, genetically novel foods, and other environmental challenges, may overwhelm Phase I and II detoxification capacity, thus triggering chronic innate immune activation.

Results of a multi-disciplinary study of autistic children showed that all of the subjects had at least some reactivity to food colourings as determined by in vitro cellular assay.[4] Similarly, many foods contain chemicals or have chemicals added to them which are intolerogenic.

The ALCAT test reproducibly measures the final common pathway of all pathogenic mechanism, whether immune, non-immune or toxic. 83.4% correlation with ALCAT and double blind oral challenges with food and 96% correlation with food additives.

The ALCAT Method

The innate immune system comprised primarily of granulated leukocytes and the complement cascade, aided by various cytokines is 'hard wired'. It is involved in delayed reactions to foods and other substances, not adequately metabolized by the liver. In vitro measurements of involved cellular reaction following antigenic challenge appears to be useful in constructing protocols for management of a broad array of clinical manifestations associated with inappropriate and chronic activation of the innate immune system.

The use of whole blood dilute and cultured in the presence of activators has the advantage that plasma proteins and soluble factors are not removed and the normal interaction of various cell types is preserved.

The ALCAT test measures the activation of circulating neutrophils when exposed to common foods and other environmental factors.

The ALCAT instrumentation is an automated liquid handling system designed to measure blood cells using the electronic principle of particle counting and sizing (measuring changes in electrical resistance produced by a blood cell suspended in a conductive liquid traversing a small aperture).

The basic principle of The ALCAT test is measurement changes in white-cell diameter after exposure with foods, moulds, food additives, environmental chemicals, dyes and pharmacoactive agents.

The blood cells are passed after an incubation period through a narrow channel and are measured by an electronic instrument, ADS1200, permitting to count instantaneously the number of cells in a parallel series of size, ranging from the smallest to the largest.

The sizes are displayed as either cell diameters or as cell volumes. Using an electronic principle histograms of the different samples was produced.

The system has proved to be extremely reproducible and sensitive with amazing clinical outcomes. Fell and Brostoff reported an 83.4% correlation with ALCAT test results and double blind oral challenges with foods. Whilst Hoj et al reported a 96% correlation with ALCAT test results and double blind placebo controlled oral challenges with food additives.[5]

Analysis of whole blood offers a significant advantage in that it contains all of the immune factors, cellular elements and serum proteins that might be involved in an adverse reaction of this type regardless of the underlying biological mechanism. Regardless of the various pathways that may underlie an adverse reaction to a food, the final common pathway will involve some mediator release. The cellular processes that occur: either swelling (vacuolization) decrease in number (destruction following de-granulation) or shrinking (partial de-granulation) are measureable through the ALCAT test.

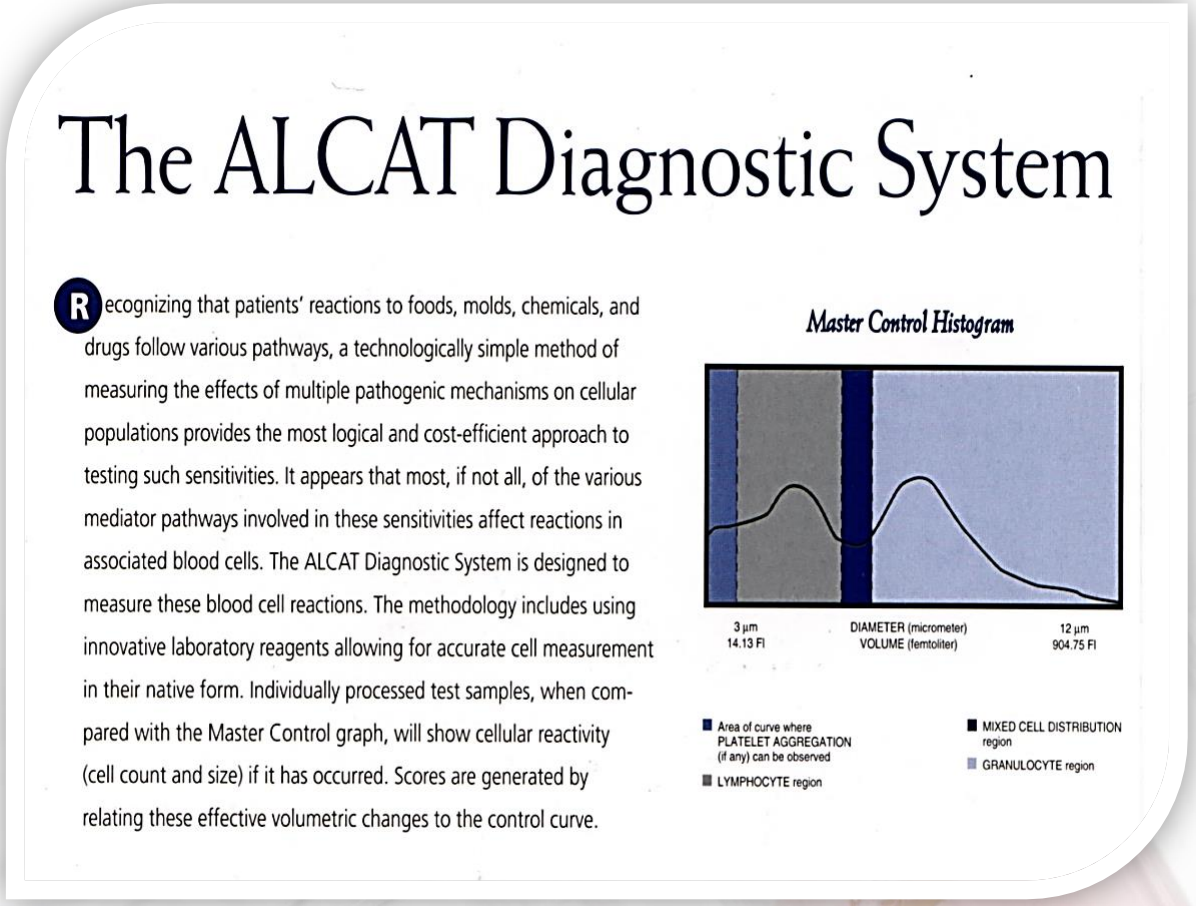

Figure 1: The ALCAT Diagnostic System

ALCAT Food Sensitivity Sample Report

Food Sensitivity Test
Food Report

Patient: TEST PATIENT Test Date: 00/00/0000

Doctor/Clinic: TEST PRACTITIONER File 1111111

Severe Intolerance

APPLE
APRICOT
ASPARAGUS
AVOCADO
BASIL
BAY LEAF
BLACK BEANS
BLACK CURRANT
BREWER'S YEAST
BRUSSELS SPROUTS
BUCKWHEAT
CABBAGE
CANE SUGAR
CARAWAY
CAROB
CHILLI PEPPER
CLOVE
CUMIN
DATE
DILL
FIG
HADDOCK
KIDNEY BEAN
LIMA BEAN
MINT
PINTO BEAN
SAGE
THYME
TURMERIC
TURNIP

Moderate Intolerance

ARTICHOKE
BOK CHOY
CARDAMOM
CAULIFLOWER
CAYENNE PEPPER
CELERY
CHICKEN
COCOA
COW'S MILK
ENDIVE
GARLIC
HAZELNUT
KIWI
LOBSTER
MAHI MAHI
MANGO
NUTMEG
PARSNIP
PEACH
PECAN
PINEAPPLE
PORK
PSYLLIUM
RADISH
RASPBERRY
RICE
ROMAINE LETTUCE
ROSEMARY
SAFFLOWER
SALMON
SCALLOP
SHRIMP
SNAPPER
SOLE
SORGHUM
SPELT
SWORDFISH
TILAPIA
VANILLA
VEAL
VENISON
WATERMELON

Mild Intolerance

ACORN SQUASH
ANCHOVY
BANANA
BLACK PEPPER
BUFFALO
CANOLA OIL
CATFISH
CHAMOMILE
CHICKEN LIVER
CHICKPEA
COCONUT
COD
COFFEE
CORIANDER
DUCK
FLAXSEED
GINGER
GRAPEFRUIT
HALIBUT
JALAPENO PEPPER
KALE
LAMB
LEEK
LENTIL BEAN
LIME
MACADAMIA
MACKEREL
MUNG BEAN
NAVY BEAN
OLIVE
PAPRIKA
PEAR
PISTACHIO
PLUM
POMEGRANATE
PUMPKIN
SCALLIONS
SEA BASS
SESAME
SPINACH
SQUASH
SQUID
SUNFLOWER
SWEET POTATO
SWISS CHARD
TEA
TOMATO
TROUT
WALNUT
WHITE POTATO

No Intolerance

Vegetables

BEETROOT	BELL PEPPERS	BLACK-EYED PEAS	BROCCOLI
BUTTERNUT SQUASH	CARROT	CUCUMBER	EGGPLANT / AUBERGIN
FAVA BEAN	FENNEL	GREEN PEA	LEAF LETTUCE
OKRA	ONION	PORTOBELLO MUSHRC	SOYBEAN
STRING BEAN	ZUCCHINI / COURGETTI		

Fruit

BLACKBERRY	BLUEBERRY	CANTALOUPE	CHERRY
CRANBERRY	GRAPE	HONEYDEW (MELON)	LEMON
NECTARINE	ORANGE	PAPAYA	STRAWBERRY

Meat

BEEF	TURKEY

Dairy products

EGG WHITE	EGG YOLK	GOAT'S MILK

Seafood

CLAM	CRAB	FLOUNDER	MUSSELS
OYSTER	SARDINE	TUNA	

Grains

AMARANTH	CORN	MILLET	QUINOA
TAPIOCA	WILD RICE		

Herbs and Spices

CINNAMON	KELP	MUSTARD	OREGANO
PARSLEY	SAFFRON		

Nuts / Oils and Misc. Foods

ALMOND	BRAZIL NUT	CASHEW	COTTONSEED
HOPS	LIQUORICE	PEANUT	PINE NUT
WATERCRESS			

You have a strong reaction to Candida Albicans. We recommend also eliminating these foods (if listed)

BAKER'S YEAST	FRUCTOSE	HONEY
MALT	MAPLE SUGAR	MUSHROOM

You have a medium reaction to Gluten/Gliadin. We recommend that you also avoid the following foods

BARLEY	MALT	OAT
RYE	WHEAT	

You have no reaction to Casein or Whey.

Test Results

The ALCAT test results are presented in an easy to understand colour-coded format. The highlight each patient's incompatible foods and the level of each reaction (severe, moderate or mild). The ALCAT test results also clearly identify the foods which are non-reactive or 'safe' foods by putting them in a green section of their results and organising them by food groups.

Understanding the Report

Foods are sorted into columns/boxes which indicate the following reactions:

Red **SEVERE Intolerance** Identifies a SEVERE reaction.

Orange **MODERATE Intolerance** Identifies a MODERATE reaction.

Yellow **MILD Intolerance** Identifies an equivocal/MILD reaction.

Green **NO Intolerance** Identifies a non-reactive item (e.g. acceptable foods).

Blue Box 1	Shows reaction of **Candida albicans** antigen. The report will automatically remove sugars that will exacerbate the Candida condition. [note this will only include foods tested for]
Blue Box 2	Shows reaction to **Gluten and Gliadin**. The report will automatically remove acceptable and mild foods that contain these proteins e.g. wheat, malt, barley, spelt, rye and oats. [note this will only include foods tested for]
Blue Box 3	Shows reaction to **Casein and Whey**. The report will automatically remove acceptable and mild foods that contain these proteins e.g. cow's milk, goat's milk. [note this will only include foods tested for]

Elimination Guidelines

Foods in the **Red** column indicate a SEVERE reaction and should be avoided for a minimum of 6 months.

Foods in the **Orange** column indicate a MODERATE reaction and should be avoided for a minimum of 3-6 months (according to how often the food had been eaten).

Foods in the **Yellow** column indicate a MILD reaction and should be avoided for 3 months or eaten or a 4-day rotation (according to how often the food had been eaten).

Foods in the **Green** section indicate no reaction though should still be eaten on a rotation basis, or more than every other day.

Removing these foods from the patient's diet will help eliminate inflammatory processes that cause many health issues. Rotating food (mildly reactive foods every four days and acceptable foods on alternate days), allows the body to go through the process of digesting, metabolizing and eliminating before the food is encountered again.

Rotational Diet

Each test result also includes a customised 4 day rotational plan. Variety in the human diet is very important to health and wellbeing and research in physical anthropology and nutritional science has shown that the human digestive system is more suited to coping with a seasonal diet as opposed to the traditional Westernised diet.[6] By eating foods in a particular family one day and then omitting them for at least the next three days, a cumulative sensitising effect is avoided.[7] This time allows the food molecules to 'clear' the system avoiding overload.

Re-introduction of Foods

After approximately 3 months, the patient can start re-introducing foods, starting with any mild (YELLOW) foods that were initially removed from the diet.

Have the patient re-introduce one food every 4 days. First thing in the morning is best. Have them write it down and highlight in a food diary (to monitor reactions).

If they ***do not*** have a reaction over the next 3 days, then that food can stay in their diet (on a rotational basis). If they ***do*** have a reaction, cease that food for another 4 weeks before re-introducing again.

After 3-6 months, re-introduce moderate (ORANGE) foods one at a time, 4 days apart, as per above. After a minimum of 6 months, repeat the above with foods that showed a severe (RED) reaction, one food at a time.

Collection Instructions

Please note that this test relies on using live blood cells for performing the analysis. Ensuring that these collection instructions are followed accurately will ensure that you receive accurate and meaningful results.

Blood test should be done on **MONDAY** or **TUESDAY** only.

Please inform the patient they should ***DISCONTINUE THE FOLLOWING MEDICATION PRIOR TO TESTING:***

- **AVOID Antihistamines** for 3-5 day prior to test.
  e.g. *Claratyne, Zyrtec, Telfast, Aerius; Demazin, Polaramine, Phenergan etc.*
- **AVOID Steroidal nasal/oral sprays** for 48 hours prior to test.
  e.g. *Pulmicort, Symbicort, Beconase, Telnase, Avamys, Nasonex, Rhinocort* etc.
- **AVOID Oral steroids** for 2-4 weeks prior to test (depending on patient's condition).
  e.g. *Prednisone, Prednisolone*
- **AVOID Antibiotics** (bacterial/viral) – wait for acute symptoms to abate before doing test.
- **REDUCE Vitamin C** <500mg/day for 3 days prior to test.
- Other medications should be withheld until after blood test.
- If the patient is suffering from a viral infection (EBV, CMV, etc) please wait until they have fully recovered before having the blood collected.

ALCAT Test Analytes

Food Cartridge A

Apple, Barley, Beef, Broccoli, Baker's yeast, Banana, Black pepper, Brown/white rice, Butternut squash (pumpkin), Cabbage, Cantaloupe, Casein (milk protein), Cane sugar, Carrot, Corn, Cow's milk, Cauliflower, Chicken, Cinnamon, Cocoa, Cottonseed, Egg (white), Egg (yolk), Fructose, Garlic, Gluten, Gliadin, Grape, Green pea, Lamb, Iceberg lettuce, Lemon, Mustard, Oat, Onion, Orange, Peanut, Pear, Pork, Potato (white), Shrimp, Soybean, Sweet potato, Tomato, Tuna, Turkey, Yellow squash, Strawberry, String bean, Vanilla, Wheat.

Food Cartridge B

Almond, Asparagus, Avocado, Basil, Bell pepper, Blueberry, Brewer's yeast, Brussel sprouts, Candida albicans, Carob, Cashew, Celery, Cherry, Clam, Coconut, Cod, Coffee, Crab, Cranberry, Cucumber, Eggplant, Ginger, Goat's milk, Grapefruit, Halibut, Honey, Hops, Lime, Lobster, Millet, Mushroom, Olive, Oregano, Parsley, Peach, Pecan, Pineapple, Pinto bean, Plum, Psyllium, Rye, Salmon, Scallop, Sesame, Snapper (red), Sole, Spinach, Tea, Watermelon, Whey.

Food Cartridge C

Amaranth, Apricot, Artichoke, Bay leaf, Black bean, Blackberry, Black-eyed pea, Buckwheat, Caraway, Cayenne pepper, Chickpea, Clove, Cumin, Date, Dill, Duck, Fig, Flaxseed, Haddock, Hazelnut, Honeydew melon, Kidney bean, Kiwi fruit, Lentil bean, Lima bean, Malt, Mango, Navy bean, Nutmeg, Oyster, Papaya, Paprika, Peppermint, Pistachio, Pumpkin, Radish, Raspberry, Red beet/Beet sugar, Safflower, Sage, Sardine, Herring, Sea Bass, Sunflower, Tapioca, Thyme, Trout, Turnip, Veal, Walnut, Tilapia.

Food Cartridge D

Acorn squash, Anchovy, Black currant, Bok choy, Brazil nut, Buffalo, Canola oil, Cardamon, Catfish, Chamomile, Chicken liver, Chilli pepper, Coriander, Endive, Fava bean, Fennel seed, Flounder, Jalapeno pepper, Kale, Kelp, Leaf lettuce, Leek, Licorice, Macadamia nut, Mackerel, Mahi mahi, Maple sugar, Mung bean, Mussel, Nectarine, Okra, Parsnip, Pine nut, Pomegranate, Portobello mushroom, Quinoa, Romaine lettuce, Rosemary, Saffron, Scallions, Sorghum, Spelt, Squid, Swiss chard (silverbeet), Swordfish, Turmeric, Venison, Wild rice, Watercress, Zucchini.

CHEM 20 [3305] – Food additives (FSANZ code number)

Aspartame (951), Benzoic acid (210), BHA (320), BHT (321), Blue 1 (132), Blue 2 (133), Erythritol (968), Green 3 (143), MSG (621), Polysorbate 80 (433), Potassium nitrite (249), Red 1 , Red 40 (129), Saccharine (954), Sodium sulphite (221), Sorbic acid (200), Sucralose (955), Xylitol (967), Yellow 5 (Tartrazine 102), Yellow 6 (110).

CHEM 30 [3306] – Food additives + Environment chemicals

Aspartame (951), Benzoic acid (210), BHA (320), BHT (321), Blue 1 (132), Blue 2 (133), Erythritol (968), Green 3 (143), MSG (621), Polysorbate 80 (433), Potassium nitrite (249), Red 1, Red 40 (129), Saccharine (954), Sodium sulphite (221), Sorbic acid (200), Sucralose (955), Xylitol (967), Yellow 5 (Tartrazine 102), Yellow 6 (110).

Ammonium chloride, Benzene, Chlorine, Glycophosphate, Fluoride, Formaldehyde, Deltamethrin, Orris root, Phenol,Toluene.

CHEM 50 [3307] – Food additives + Environmental chemicals + Pharmaceuticals

Aspartame (951), Benzoic acid (210), BHA (320), BHT (321), Blue 1 (132), Blue 2 (133), Erythritol (968), Green 3 (143), MSG (621), Polysorbate 80 (433), Potassium nitrite (249), Red 1, Red 40 (129), Saccharine (954), Sodium sulphite (221), Sorbic acid (200), Sucralose (955), Xylitol (967), Yellow 5 (Tartrazine 102), Yellow 6 (110).

Ammonium chloride, Benzene, Chlorine, Glycophosphate, Fluoride, Formaldehyde, Deltamethrin, Orris root, Phenol, Toluene.

Acetaminophen, Amoxycillin, Ampicillin, Aspirin, Cephalosporin C, Clinoril, Diclofenac, Diflunisal, Gentamycin, Ibuprofen, Indomethacin, Naproxen, Neomycin, Nystatin, Penicillin, Penicillamine, Piroxicam, Streptomycin, Sulfamethoxazole, Tetracycline.

Moulds [3308]

Alternaria, Aspergillus, Botrytis, Candida albicans, Cephalosporium, Clado herbarum, Curvularia, Epicoccum nigrum, Fusarian oxysporum, Helminthosporium, Hormodendrum, Monilia sitophila, Mucor racemosus, Penicillium, Phoma herbarum, Pullularia, Rhizopus nigricans, Rhodotorula rubra, Spondylocladium, Trichoderma.

Herbs, General [3309]

Acai berry, Agave, Aloe vera, Ashwagandha, Astragalus, Barley grass, Bee pollen, Bilberry, Black walnut, Cascara, Chlorella, Dandelion, Echinacea, Elderberry, Essiac, Feverfew, Ginkgo biloba, Goji berry, Goldenseal, Grape seed extract, Guarana seed, Gymnema, Hawthorn, Huperzine, Kava, Lutein, Lo han, Maitake, Mangosteen, Milk thistle, Mullein, Noni berry, Pau d'arco, Pine bark, Red clover seed, Red yeast, Reishi, Resveratrol, Rhodiola, Rooibos, Schisandra, Senna, Spirulina, Stevia leaf, St Johns wort, Valerian, Vinpocetine, Wheatgrass, Wormwood, Yellow dock.

Herbs, Female [3310]

Alfalfa, Arnica, Black cohosh, Bleesed thistle, Blue cohosh, Boswellia, Buchu, Bupluerum, Burdock, Butcher's broom, Calendula, Cat's claw, Chaparral root, Chasteberry, Cramp bark, Damiana, Dong quai, Evening primrose, False unicorn, Fo-ti root, Gotu kola, Horsechestnut, Horsetail, Irish moss, Juniper berry, Korean ginseng, Lavender, Lemonbalm, Lobelia, Maca root, Marshmallow root, Mistletoe, Motherwort, Myrrh, Nettle leaf, Partridge berry, Pennyroyal, Peony root, Red clover flower, Raspberry leaf, Rehmannia, Sarsaparilla, Siberian ginseng, Skullcap, Slippery elm, Uva ursi, Willow bark, Wild yam root, Yarrow, Yerbe mate.

Herbs, Male [3311]

Alfalfa, American ginseng, Burdock, Butcher's broom, Calendula, Cat's claw, Catuaba, Chaparral, Chondroitin, Cnidium monnier, Damiana, Dong quai, Fo-ti root, Glucosamine, Gotu kola, Horny goat weed, Juniper berry, Korean ginseng, Lobelia, Lycopene, Maca root, Mistletoe, Mucuna pruriens, Muira puama, Myrrh, Nettle leaf, Nettle root, Pumpkin seed, Pygeum bark, Rehmannia, Sarsaparilla, Saw palmetto, Siberian ginseng, Skullcap, Tribulus terrestris, Uva ursi, Velvet deer antler, Yarrow, Yerbe mate, Yohimbe bark.

Combination Panels

Paediatric profile [3312]	50 Foods (Cartridge A, B, C or D) + Chem 20
Comprehensive profile 6 [3313]	100 Foods (Cartridges x2) + Chem 20
Comprehensive profile 5 [3314]	100 Foods (Cartridges x2) + Chem 30 + Moulds
Comprehensive profile 4 [3315]	150 Foods (Cartridges x3) + Chem 20
Comprehensive profile 3 [3316]	150 Foods (Cartridges x3) + Chem 30 + Moulds
Comprehensive profile 2 [3317]	200 Foods (Cartridges A, B, C & D) + Chem 20
Comprehensive profile 1 [3318]	200 Foods (Cartridges A, B, C & D) + Chem 30 + Moulds
Platinum profile [3319]	200 Foods (Cartridges A, B, C & D) + Chem 30 + Moulds + Pharmaceuticals + 50 herbs

Please see Test Directory for pricing

Frequently Asked Questions

Does my patient have to stop all supplements?

Vitamins, minerals and herbals are not an issue for ALCAT testing, but, we do ask that if a patient is having a morning blood draw that they wait and take medications or supplements after the blood draw. There should be 3 hour wait before or after taking medications, vitamins or herbals before having blood drawn.

Does my patient have to eat 'suspect' foods prior to the ALCAT test?

If a patient has been off a food for more than three months and are interested in knowing if sensitive to that food, re-introduce that food at least 1 or 2 times before doing ALCAT. A patient would never introduce a food that is IgE mediated (true food allergy) only reintroduce foods patient has been avoiding/reduced because they thought it may bother them.

Can the ALCAT test be done on children?

We have had babies as young as 6 months have the ALCAT test with excellent results. Remember with ALCAT we are not depending on a mature immune system, as we are looking at the reactivity of the cell.

Why does my patient show a SEVERE fructose reaction, yet, some fruits in their report are still showing in the NO intolerance green zone?

Fructose is no longer the same as naturally occurring fructose in fruit. This patient will go by their ALCAT results for fruits and not use any prepared product that has fructose listed as an ingredient.

What kind of mushroom is tested on the ALCAT test?

If a patient tests the ALCAT food 200 panel, they will be tested for both Button mushroom and Portobello mushroom. If they test the 50 Functional foods then they will be tested for Maitake mushroom and Reishi mushroom.

Does ALCAT test for salicylates?

Salicylic acid is tested in the anti-biotic/anti-inflammatory panel listed under Aspirin.

However, salicylates are naturally occurring in many fruits and vegetables. We can provide you with a *TABLE OF FOODS CONTAINING SALICYLATES* and you would then decide to leave the food on the patient's ALCAT rotation diet or take it off.

My patient has had a severe allergic reaction to processed foods. Which is the best panel to test?

It would depend if the reaction happened immediately (up to 4 hours) or a delayed reaction that occurred after 4 hours or longer. If it was a delayed response then ALCAT test is appropriate and we recommend the patient test for 200 foods plus food additives and colourings i.e. ALCAT Comprehensive Profile 2 [3317], as you don't know if the reaction is from food or chemicals so it is better to test both.

How long will it take to receive my ALCAT test results?

Web results are posted within 5 business days. Hard copies will be received within 10 business days.

Is this a food allergy test?

The ALCAT Test is NOT a food allergy test. It is designed to test for intolerances, which have a delayed reaction.

I know I have an allergy to a food. Why is it on my acceptable food list/Green Column?

This is due to the fact that the ALCAT test detects sensitivities/intolerances and NOT allergies.

Is the ALCAT test covered by insurance?

The ALCAT test is not covered by Medicare or standard medical health insurance.

What are the medication restrictions for the ALCAT test?

See under COLLECTION INSTRUCTIONS.

Is this a blood test?

Yes.

Is fasting required before taking the ALCAT test?

No.

Where can I have my sample drawn?

Associate blood collection centres can be found at **www.sonichealthcare.com**

QLD	Sullivan Nicolaides	www.snp.com.au/locations/collection-centres.aspx
NSW	Douglass Hanly Moir	www.dhm.com.au/our-locations/collection-centres.aspx
ACT	Capital Pathology	www.capitalpath.com.au/locations/collection-centres.aspx
VIC	Melbourne Pathology	www.mps.com.au/locations/collection-centres.aspx
SA	ClinPath	www.clinpath.com.au/locations/collection-centres.aspx
WA	CliniPath	www.clinpath.com.au/locations/collection-centres.aspx
TAS	Hobart Pathology	www.hobartpath.com.au/locations/collection-centres.aspx
Launceston Pathology		www.launcestonpath.com.au/locations/collection-centres.aspx
North West Pathology		www.northwestpath.com.au/locations/collection-centres.aspx

Do I need to fill each tube completely?

Each tube must be filled to capacity. Failure to do so may require recollection.

Is there a blood draw fee?

When using one of our associate blood collection centres, there is a fee of $33.00 per blood draw.

Inflammation and Sensitivities

Food products most frequently incriminated in allergic reactions are often hidden as ingredients in commercial foods.

Many modern foods, as well as medicinal drugs such as penicillin, also contain preservatives, stabilizers, artificial colourings, and flavourings.

Some scientists believe that increased chemical pollution in our air, water, and food is to blame. Foods can easily become contaminated by the use of insecticides in farming.

We know that inflammation of the gut impairs nutrient absorption and food allergy and intolerance is the major cause of inflamed gut syndromes.

When inflammation develops as a result of an abnormal trigger and/or becomes chronic that normal tissues can be damaged.

Food intolerance provokes immune mediated vasculitis (inflammation), which causes fluid to leak from your capillaries into surrounding connective tissues and results in water retention.

For example, with 'leaky gut':

- Increased permeability of stomach and intestinal lining causing large undigested food molecules to be released into blood stream.
- Immune system sees food molecules as 'foreign invader' and mounts cellular response. Sends white cells to destroy undigested food proteins which are now lodged into vascular tissue.
- Cells destroy not only food molecules but surrounding tissue as well.
- This process is your body's inflammatory response. The body is spending time neutralizing toxins, resulting in slowed metabolism.

Food sensitivity or intolerance may alter your biochemical balance, influencing appetite-controlling hormones like serotonin. This results in abnormal cravings for simple sugars and carbohydrates. Your metabolism is disrupted, resulting in less efficient energy production and increased fat storage.

Dietary lectins which may be resistant to degradation through cooking and digestion occur in numerous vegetables, fruits, grains and some meats. Some lectins can even bind to receptors on mast cells which trigger histamine release similar to that which is seen in classical allergic reactions. This lectin activity is not blood type specific. There is no convincing scientific evidence that blood type is associated with specific food induced pathologies.

Other immune conditions have been associated with food intolerances.

Dr. Paul M. Ridker, Cardiologist at Brigham and Woman's Hospital Boston, has stated: "We suspect there is a 'common soil' which both cardiovascular disease and diabetes share, and that this common underlying cause may be inflammation."

Hashimoto's autoimmune thyroiditis is characterized by the presence of autoantibodies that block TSH receptors on the thyroid, thus suppressing the production of T4. The primary source of antigenic stimuli for the production of these autoantibodies is likely gut-derived antigens.[8]

Cortisol suppresses secretory immunoglobulin (sIgA) in the gastrointestinal tract, which leads to impaired gut antigen sampling. Furthermore, cortisol alters the consistency of the gastrointestinal mucosal barrier. The combined result of these effects is an enhanced immune response to gut-derived antigens and increased translocation of antigenic material to systemic circulation. Both of these processes could directly lead to the production of antibodies that would cross react to TSH receptors, leading to the development of Hashimoto's thyroiditis.[9]

Further Reading

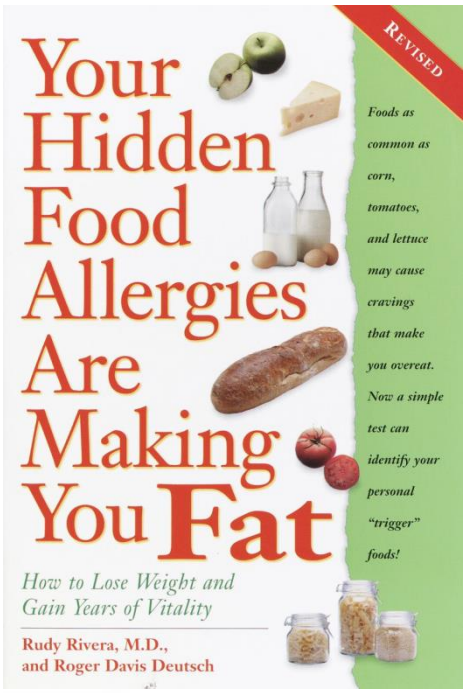

Figure 3: Rivera R & David Deutsch, 'Your Hidden Food Allergies Are Making You Fat' (2002) 2nd edition Three Rivers Press, New York.

The Right Stuff: Use of ALCAT Testing to Determine Dietary Factors Affecting Immune Balance, Health and Longevity.

The aging processes are manifesting at earlier ages. Metabolic syndrome, characterised by obesity, diabetes and cardiovascular disease, has sharply increased in recent years. Many observational studies support the thesis that the deleterious effects exerted by free radicals, upon lipid membranes, DNA and protein structures, forms the common underlying basis of the many diverse degenerative aging disorders. The inability to tolerate foods and environmental factors induces chronic activation of the innate immune system and gives rise to inflammatory processes, which includes excess production of reactive oxygen species and the release of preformed and newly synthesised mediators of inflammation. A simple blood test (ALCAT) can be used to identify food and other factors that induce innate immune system activation.

Whilst other foods induce hormonal secretions associated with the activation of proinflammatory genes, such as foods having a high glycaemic index that induce insulin secretion. It is quite possible that food induced inflammatory bowel promotes sugar cravings as activated immune cells in the gut consume serotonin, thus possibly creating a deficit of this key neurotransmitter in the brain.[10] Yet other foods exert anti-inflammatory effects, such as foods high in omega-3 fatty acids (EPA, DHA) e.g. oily fish, which induce a decrease in inflammatory cytokine production from monocytes, notably, IL-1, IL-6 and TNF-α.

Chronic inflammation is the primary cause of free radical generation and the common soil of most, if not all, of the diseases of aging. The most significant source of free radicals as well as preformed and newly synthesised inflammatory mediators is the activated innate immune system. Further, clinical observations suggest a link between genetic differences and how each individual reacts to food and other environmental exposures as a function of biochemical individuality. Adverse reactivity to foods and other environmental substances activates the innate branch of the immune system, generating release of toxic inflammatory mediators and reactive oxygen and nitrogen species.

Commonly eaten, but constitutionally incompatible foods and additives, as well as other environmental exposures , seem to be associated with chronic activation of innate immunity and therefore a major contributor to degenerative processes.

A prominent feature of innate immunity is the phagocytic cells. Phagocytes will engulf foreign pathogens into vacuoles then, merging the cytoplasmic granules containing highly toxic performed proteolytic enzymes, destroy the pathogen. In addition to these enzymes, an activated phagocyte will also generate free radicals and other toxic reactive oxygen and nitrogen species. These can be taken up by nearby cells causing peroxidation of lipids in cell and organelle membranes, deformation of protein structures and damage to both unclear and mitochondrial DNA.

Overloading the macrophage/monocyte system with the need to clear apoptotic neutrophils allows some of them to undergo secondary necrosis, whereby uncleared cell fragments release their nucleosome fragment, which themselves may promote further inflammation and autoimmunity.[11]

Commonly eaten food or food additive will wipe out as much as 20% of the live neutrophils in vitro as determined by ALCAT test method.

Interaction between the neutrophil and/or macrophage and the invader is facilitated by the cell surface receptors' ability to recognise molecular repeat structures on pathogen surfaces. Phagocytes also possess lectin receptors capable of recognizing mannose molecules on pathogens. However, many foods also contain lectin molecules and can easily be mistaken for pathogens, setting off a damaging response.

In some instances cells are assisted by the complement cascade of serum proteins, to effect binding of these markers on the pathogen surface (opsonisation). This occurs even on the very first exposure and is characteristic of innate immunity. Prior exposure is not necessary to initiate it and repeated exposure does not enhance it.

Excessive generation of free radicals and reactive oxygen (and nitrogen) species and proteolytic enzymes ('intolerance') results in chronic inflammation, tissue and DNA damage and leads to premature aging and possible cancer. Inappropriate activation of cytotoxic lymphocytes and other defence mechanisms aimed at self-proteins induces autoimmunity.

Other reactions to foods and chemicals, reactions termed intolerances or sensitivities, where symptom onset is delayed and typically less acute in nature, occur considerably more often.

Broadly speaking, classical allergy is a function of the specific immune system while intolerance or sensitivity primarily involves the innate branch of the immune system.

Intolerances to foods often produce delayed and less dramatic symptoms and are therefore less obvious. Although neutrophils are not directly involved in Type I allergy, they do play a central role in intolerance reactions.

Frequent and high exposure to an antigen favours an IgG response, whereas low level and infrequent allergen exposure induces an IgE response.

Zar, Kumar and Benson sum up: "In fact, several studies have suggested that IgG and IgG4 production may be a normal immunological response to dietary antigens. It is probable that food hypersensitivity is a heterogeneous condition, and that more than one immunological abnormality may exist."[12]

- Roger Davis Deutsch, Cell Sciences Systems, AntiAging Therapeutics (Vol X) 2007 Conference

Allergies in Australia

Australia and New Zealand have among the highest prevalence of allergic disorders in the developed world. An ASCIA-Access Economics Report estimated that in 2007:

1. 4.1 million Australians (19.6% of the population) had at least one allergic disease;
2. The highest prevalence of allergies is in the working age population with 78% of people with allergies aged 15 to 64 years;
3. There are 7.2 million cases of allergy (i.e. an average of 1.74 simultaneous allergies per person).
4. The Australian population is ageing. If current trends continue, there will be a 70% increase in the number of Australians with allergy, from 4.1 million in 2007 to 7.68 million by 2050 (26.1% of the population or more than one in four Australians) compared to 5.62 million (19.1%) by mid-century due to demographic ageing alone and compared to one in five Australians today.
5. In Australia there is a lack of appreciation of the impact of allergic disorders on quality of life, and even less of the economic impact to society and individuals who suffer allergic disease.

Allergic rhinitis (hay fever) currently affects 1:10 children aged 6-7 years; 1:6 children aged 13-14 years, and 2:5 adults. Asthma currently affects 1:5 children, 1:10 adults. Eczema currently affects 1:6 children aged 6-7 years, 1:10 children aged 13-14 years, and 1:14 adults.

Food Allergy

1. A questionnaire-based study of 4173 South Australian school children aged 3-18 years published in 2000 showed that 55 (1.3%) and 18 (0.4%) were assessed as having food allergy and food induced anaphylaxis, respectively.
2. In adults aged 20-45 years, approximately 1.3% were estimated to suffer from food allergy, most commonly to peanut, followed by shrimp (prawn), cow's milk and egg.

3. A Canberra-based study published in 2009 estimated that the *minimum* proportion of children with food allergy by age 6 years to be 2.5% of children, and 1.15% would develop peanut allergy by the same age, both considered to be very conservative estimates.
4. In the most accurate estimate of food allergy in Australia performed thus far and published early 2011, the HealthNuts study based in Melbourne, Victoria, demonstrated food challenge proven incidence of food allergy at age 12 months to be much higher than previously suspected; food allergy overall (10%); peanut allergy (3%); raw egg (8.8%) and sesame seed (0.8%). Of those with egg allergy, 80% could eat egg baked into cake.

www.allergycapital.com.au/allergycapital/allergies_in_australia.html

Scientific Studies

Short Term Efficacy of the ALCAT Test of Food Sensitivities to Facilitate Changes in Body Composition and Self-Reported Disease Symptoms: A Randomised Controlled Study.

GR Kaats, D Pullini, LK Parker 1996 American Journal of Bariatric Medicine, Spring.

Analysis of the pre-study data revealed that there were no significant differences between the experimental and control group on any of the parameters of the test battery. However, compared to the control group, the group following the ALCAT diet lost significantly more scale weight, % body fat and fat weight, had greater improvements in body composition, and had greater increases in fat-free mass. When compared to the control group the ALCAT group reported improvements in all 20 items on the DSI, 18 of which were significant at the p=0.06 to <0.001 levels.

Conclusion: As compared to participants following a weight control plan of their own choosing, following the ALCAT test and diet plan resulted in highly significant improvements in body composition and self-reported disease symptoms. The data reveal the 98% of subjects following the ALCAT plan either lost scale weight or improved their body composition.

Food Intolerance in Patients with Cutaneous Diseases: Diagnostic value of the ALCAT test.

L Berardi, M DeAmici, A Vignini, C Torre, M Mosca. XXVIII European Academy of Allergy and Clinical Immunology Congress, Abstract 1281, June 2009. Warsaw, Poland.

A group of twenty patients affected by cutaneous disease and presenting the chronic urticaria, itching or dermatitis with negative allergic tests (prick and/or RAST) were ALCAT tested. No subject was currently treated with systemic corticosteroids, antihistamines or anticoagulants. 86% of subjects exhibited a dramatic improvement in symptoms whiled 14% showed no change or did not follow the diet.

Conclusion: The ALCAT test appears to have diagnostic value in detecting food intolerance.

Food Intolerance in Patients with Angioedema (AE) and Chronic Urticaria (CU): An Investigation by RAST and ALCAT test.

L Hoj. 1995, European Journal of Allergy and Clinical Immunology Supplement No. 26, Vol. 50.

Total IgE and eosinophils were raised in 6 and 3 cases respectively. RAST airborne and RAST-food were positive in 7 and 4 cases, respectively and all patients were reactive in ALCAT test against 8-29 foods. Individual diets comprising ALCAT non-reactive foods eliminated form RAST-positive foods and food additives resulted in total remission in 45 individuals, remission of AE but not CU in 5 and failure in one case.

AE being potentially lethal, oral challenges were not applied due to ethics.

Conclusion: High clinical significance also at long term follow up was obtained in severe AE and CU by applying the results of the ALCAT test whereas IgE-mediated allergies play a minor role.

The ALCAT Test – A Guide and Barometer in the Therapy of Environment and Food Sensitivities

B Solomon, 1992. Environmental Medicine, Vol. 9, #1 & 2.

Percentage improvement was averaged in various symptom categories. Percentage improvements in symptoms as judged by the patients, and the speed and accuracy of the technique indicate that the ALCAT procedure is a beneficial addition to the armamentarium of the physical treating environmental illnesses.

Conclusion: The advantages of speed and scope of the ALCAT system in testing foods, in terms of numbers of foods that can be tested at one time, more than compensates for the slight decrease in accuracy when compared to the standard of oral food challenge. In terms of objectivity and accuracy, it is superior to cytotoxic testing. Compared to standard IBS or standard migraine diets the ALCAT testing is much superior because it is specific to the patient.

ALCAT Test Identifies Food Intolerance In Patient with Gastrointestinal Symptoms.

L Berardi, M De Amici, A Vignini, G Mantegna, M, Mosca. XXVIII European Academy of Allergy and Clinical Immunology Congress, Abstract 1280, June 2009. Warsaw, Poland.

A group of 15 patients affected by GI symptoms and negative for allergies (prick and/or RAST) had ALCAT test. After two months we evaluated the effects of the elimination diet which was based on the results of the ALCAT test. 54% of remaining subjects improved significantly while 46% showed no change.

Conclusion: The ALCAT test appears efficacious in detecting food intolerance.

Final Statistical Report: Study of the ALCAT test in 10 subjects

P Ferglund, Parexel Medstat, Sponsored by AMTL Norge

For ALCAT test 1, 391 out of 500 test the same test scores and measure of agreement kappa was 0.19. For ALCAT test 2, 432 out of 500 tests the same test scores and the measure of agreement kappa was 0.18.

Conclusion: The overall reproducibility was 97% for ALCAT test 1 and 99% for ALCAT test 2. For both tests together the reproducibility was 98%.

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