

INHIBITORY EFFECT OF SODIUM CROMOGLYCATE
On Granulocyte Response to Food Antigens *In Vitro*.
D.H. Sandberg, MD, M.J. Pasula, PhD, P.J. Fell, Miami, FL and UK

INHIBITORY EFFECT OF SODIUM CROMOGLYCATE ON GRANULOCYTE RESPONSE TO FOOD ANTIGENS IN-VITRO.

DH Sandberg, MD & MJ Pasula, PhD,
Miami, FL; PJ Fell, MD; UK

A pilot study was done to determine if sodium cromoglycate (SC) would inhibit the cellular response to food antigens in-vitro as measured by the ALCAT Test. Previous studies have documented the stabilizing effect of SC on Mast cells. The ALCAT Test electronically measures volume shifts in peripheral blood cells following incubation of equal aliquots of whole blood with food antigens by comparing a test histogram (sample with antigen) with a control histogram (without antigen). Results are expressed in terms of percent change of cell volume and number of the test sample vs. control. Preliminary investigation carried out to identify any toxic effect of SC compared effects of 10 dilutions on a standard WBC blood suspension (1:500) used in the test. A 1:1000 dilution which had no discernible effect of WBC's in the whole blood suspension, was selected for use in evaluation of pretreatment with SC. In ten subjects (9 F and 1 M) with various clinical conditions, in whom food sensitivities were suspected, the ALCAT Test for 10 commonly eaten foods was done with and without prior addition of SC.

RESULTS	# (-) scores [0 - 9%]	# Equiv. [10 - 12%]	# (+) scores [>= 13%]
Non-Treated	75	16	8
Nalcrom treated	85	11	4

Reactions to foods occurred only in the granulocyte region of the histogram, with no notable changes in the areas containing platelets or lymphocytes. The individual test mean of 8 patients decreased by 17.6% when comparing non-treated vs. treated; in 2 patients, the mean increased by 2.9%. In the ALCAT Test, SC appears to inhibit in-vitro changes in mean granulocyte size and number.

SUBJECT POPULATION PROFILE

SUBJECT	AGE	SEX	DIAGNOSIS
MA	81	F	IBS & Arthritis
KC	28	F	Migraine
HC	88	F	IBS
ML	38	F	IBS
JA	33	M	Chronic Stomatitis
FR	42	F	Multi-system Allergy
AM	8	F	Multi-system Allergy
MX	63	F	IBS & Fatigue
AB	10 mo.	F	Multiple Formula Intol.
SS	83	F	Multi-system Allergy
AK	13	F	IBS & Fatigue
DD	4	M	Recurrent Vomiting
JC	45	M	Malabsorption
CS	64	F	Multi-system Allergy
JW	8	M	Asthma, Allergic Rhinitis, Glomerulonephritis
PR	54	F	Asthma
GS	87	M	Multi-system Allergy
DG	58	F	IBS

METHODOLOGY

Aliquots of whole blood (0.5cc of whole blood diluted 1:500) were dispensed using a repeat pipettor into 10 blood dilution vials. Five vials contained 40 microliters of the Sodium Cromoglycate test solution (used as controls). Each test set was then incubated at 37°C for 45 minutes and then allowed to stand at room temperature for an additional 45 minutes. Ten dilutions were tested: 1:10, 1:50, 1:100, 1:250, 1:500, 1:1000, 1:2500, 1:5000, 1:10000 and 1:20000. The diluent of choice was a 50% glycerine solution. The dilution chosen for the food response study (1:1000) was one which demonstrated no reaction with cells as tested by the ALCAT method.

In the ALCAT method, measurements are made using the electronic principle of particle counting and sizing which is based on changes in electrical resistance (pulses) produced by a particle (in this case a blood cell) suspended in a conductive liquid, traversing a small aperture. The particles, or cell pulses, are counted and discriminated by size comparators to produce a histogram. The histogram is displayed by plotting the relative number of counts on the y-axis. The cell size (in femtoliters) is displayed by plotting on the x-axis. Relative number (frequency) will refer to the number of cells of a particular size. The relative number is depicted by the height of a peak or the depth of a valley between two peaks. The percent score is derived by summing the absolute difference between the sample and control histogram measured at every point then dividing by the total number of control cells. The percent score is used to determine degree of reactivity by categorizing is accordingly: 0 - 9% is a negative score, 10 - 12% is an equivocal score and above 13% is a positive score.

Table of food scores comparing untreated vs. SC treated results

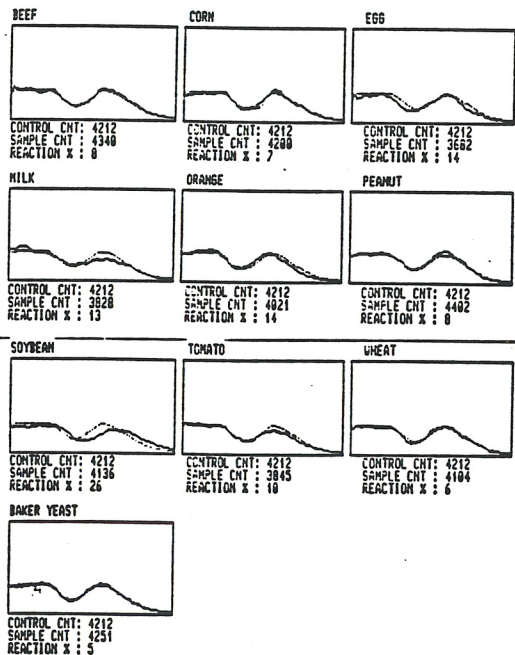
SUBJ.	RESULTS (% score untreated / % score SC treated)
	beef corn egg milk orange peas soy beans wheat yeast
MA	0/7 12/12 14/13 7/7 0/8 0/7 0/8 7/11 12/8 7/8 summary: 80/83
KC	0/8 0/8 7/4 0/5 22/8 11/8 0/8 0/8 19/8 4/7 summary: 107/87
HC	4/12 0/7 10/4 0/5 7/8 7/4 14/7 11/13 7/8 5/8 summary: 75/77
ML	7/4 5/5 7/8 5/8 0/7 5/8 12/7 11/11 12/8 0/5 summary: 81/85
JA	5/10 0/5 0/8 0/7 7/8 4/8 0/7 0/7 10/8 0/8 summary: 75/71
FR	5/4 5/5 0/5 12/8 0/8 0/4 0/8 0/5 7/8 7/5 summary: 68/64
AM	0/7 0/5 4/5 0/4 7/8 18/8 20/8 13/10 10/8 4/4 summary: 89/85
MX	5/8 5/17 5/5 5/4 11/8 0/8 12/4 9/10 0/8 12/13 summary: 77/82
AB	5/8 5/8 0/8 0/7 7/4 4/5 0/8 0/5 5/4 0/4 summary: 94/57
SS	0/8 0/8 11/8 10/8 5/8 0/10 0/10 10/10 11/10 0/8 summary: 83/80

8 ADDITIONAL SUBJECTS

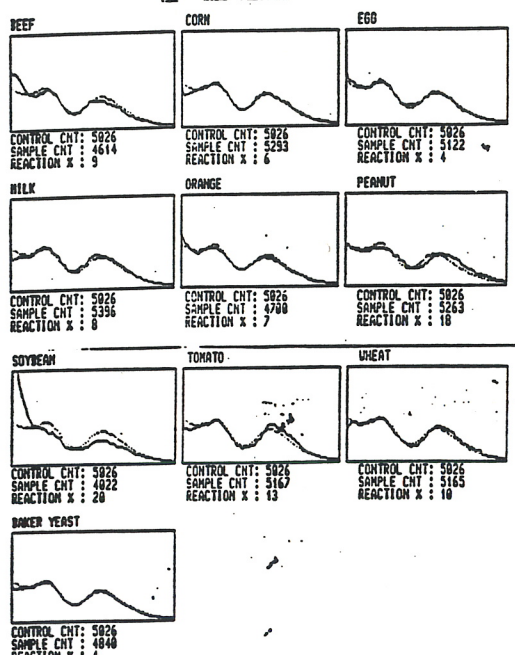
SUBJ.	RESULTS (% score untreated / % score SC treated)
	beef corn egg milk orange peas soy beans wheat yeast
AK	5/4 0/5 0/5 0/8 7/5 0/5 25/8 0/5 10/5 0/8 summary: 88/48
DD	4/4 0/5 3/3 0/1 4/4 5/4 7/7 0/8 4/11 5/8 summary: 48/62
JC	4/12 0/18 0/4 0/3 12/7 10/8 12/8 15/8 11/7 5/7 summary: 81/78
CS	43/5 5/8 11/4 11/4 7/18 5/18 11/10 0/5 4/4 0/4 summary: 110/74
JW	0/5 7/4 14/8 13/3 14/5 0/8 28/8 10/7 0/8 5/4 summary: 151/54
PR	5/4 5/4 7/4 4/7 0/8 7/3 0/8 0/7 0/7 0/4 summary: 84/58
GS	5/8 0/3 17/3 5/5 10/8 0/4 0/4 14/8 0/4 10/7 summary: 81/50
DG	7/5 5/3 0/4 0/8 4/7 5/3 0/4 5/8 7/8 5/5 summary: 60/51

	# (-) scores [0 - 9%]	# Equiv. [10 - 12%]	# (+) score [>= 13%]
non-treated	59	10	10
Nalcrom treated	75	3	3

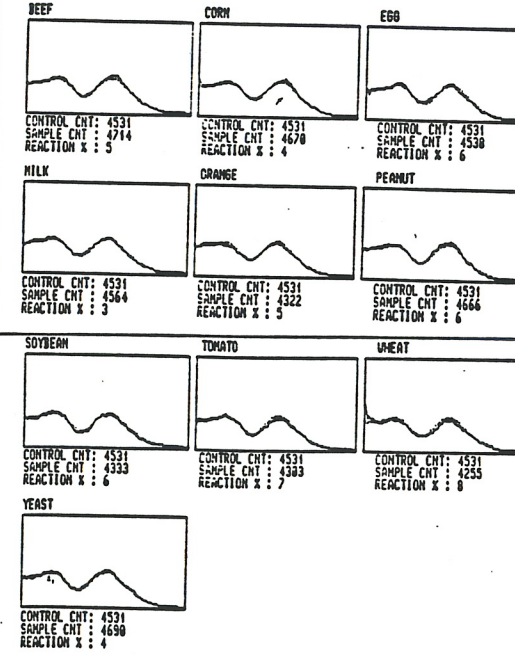
J.W. - Non-Treated



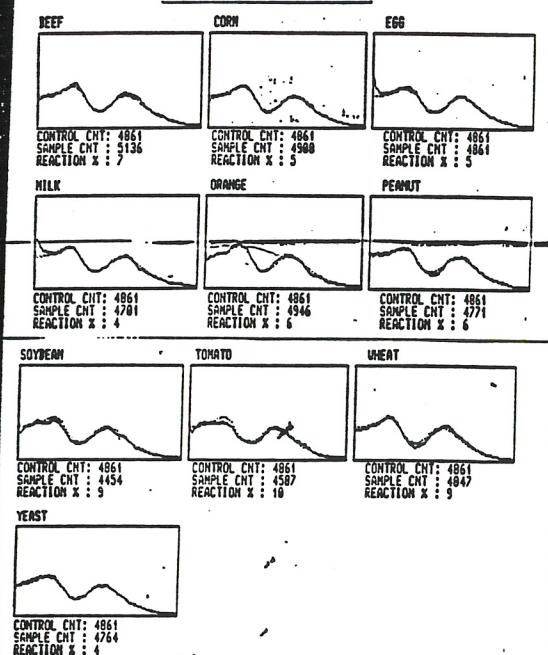
A.N. - Non-Treated



J.W. - SC Treated



A.N. - SC Treated



D.H. Sandberg, MD, M.J. Pasula, PhD, P.J. Fell, Miami, FL and UK

American College of Allergy and Immunology, Annual Meet.
NOV 1990
LOS ANG.