Measurement of Anti-Saccharomyces cerevisiae Antibodies in Human Feces as an Indicator of Crohn's Disease

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Introduction:

The method of determining the presence of serum ASCA as a marker of Crohn's disease has been used for the differentiation between Crohn's disease ulcerative colitis and has been and previously published. In the following study, we describe the first noninvasive method for determining the presence of fecal ASCA. Our approach provides a highly specific method utilizing the extract of Saccharomyces cerevisiae for measuring total fecal ASCA as an aid to distinguish Crohn's disease from other gastrointestinal illnesses such as ulcerative colitis and irritable bowel syndrome (IBS).

Aim:

To describe a novel method for detecting ASCA in human feces and evaluate the clinical utility for distinguishing Crohn's disease from ulcerative colitis and IBS.

Methods:

Fecal ASCA levels were determined qualitatively by an enzyme-linked immunoassay (ASCA-CHEK[™] ;TechLab[®], Inc.). The immunoassay uses anti-human immunoglobulin antibody conjugated to HRP and microwells coated with Saccharomyces cerevisiae antigens. Fecal specimens were diluted 1:20 in the kit diluent and results were determined by measurement of the optical density (OD) at 450nm/620nm. Results of > 0.200 were considered positive for the presence of fecal ASCA. Typing of immunoglobulins in feces was done using specific human Ig conjugates.

Patient Population:

- Ulcerative colitis (UC): 37 patients comprised of 15 females and 22 males ranging in age from 21-70.
- Crohn's disease (CD): 49 patients comprised of 23 females and 26 males ranging in age from 21-78.
- **Irritable bowel syndrome (IBS): 22 patients** comprised of 20 females and 2 males ranging in age 19-78.
- Healthy control (HC): 12 persons comprised of 8 females and 4 males ranging in age from 20-79.

Results:

Immunoglobulin Typing of ASCA in Human Fecal Snecimens

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Patient Number	Disease	Anti- human IgA Conjugate	Anti- human IgA _{sec} Conjugate	Anti- human IgD Conjugate	Anti- human IgM Conjugate	Anti- human IgG Conjugate	Anti- human Ig Conjugate			
1	Crohn's disease	+	+	-	+	+	+			
2	Crohn's disease	+	+	-	+	-	+			
3	Crohn's disease	-	-	-	-	-	-			
4	Crohn's disease	+	+	ND	+	-	+			
5	Crohn's disease	+	+	ND	-	-	+			
6	Crohn's disease	+	+	ND	+	-	+			
7	Ulcerative colitis	-	-	-	-	-	-			
8	Ulcerative colitis	-	-	-	-	-	+			
Serum Control	Yeast allergy	-	-	-	+	+	+			

ND= Not done

The single UC patient that Note: reacted with the human Ig-specific conjugate tested negative for IgE immunoglobulin.

ASCA-CHEKTM Test Results for **Patient Population and Controls**

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Statistical Analysis of Test Results

	¹ N=86 ² N=120	¹ Cro disea Ulcer coli	¹ Crohn's disease vs Ulcerative colitis		nn's e vs BS IC	
	Sensitivity	55.1	55.1%		%	
	Specificity	86.5	%	91.6	%	
	Predictive Pos Value	84.4	84.4%		%	
	Predictive Neg Value	59.3	%	74.7	%	
	Correlatio	on 68.0	68.6%		%	
Group ID	Mean OD	SD	R	OD tange	P Value	
CD	1.183	0.794	0.34	11-3.000	CDvsUC,IBS,H p < 0.005	
UC	0.382	0.113	0.382-0.113		CDvsUC p < 0.05	
IBS	0.091	0.038	0.05	52-0.238	CDvsIBS p < 0.005	
нс					CDvsHC p < 0.005	

Conclusion:

•Results show that fecal ASCA is specific and useful for indicating CD.

•Sensitivity and specificity is similar or better than that reported for serum based ASCA tests.

Based on Ig assays, IgA, IgA are the primary ASCA detected in feces.

•Fecal ASCA may be useful to couple with fecal lactoferrin (IBD-CHEK[™]) for assessing patients suspected of having IBD.