

Study with EL AL on its Boeing 777 Fleet

Aircrafts are among the most challenging indoor environments of all other transportation modes due to:

- a) Closed ventilation systems where one is physically confined and exposed to during the entire flight duration.
- b) Time spent on flights can be considerably long
- c) The density of passengers inside aircrafts is higher than other transportation means
- d) The immune systems may be weakened due to extensive duration of flights at unusual air pressure conditions, coupled with exposure to unusual high ratios of microbial load.

Passengers and crew in-flight illnesses is notoriously known and well documented; available technology in service provides minimal or no relief. betterair has taken on the challenge, collaborating with EIAI – the national Israeli airlines, to improve passenger's wellbeing in flights; EIAI's vision has been to proactively protect its passengers and crew, therefore, enthusiastically agreed to collaborate with betterair on testing of its 777 aircraft fleet.

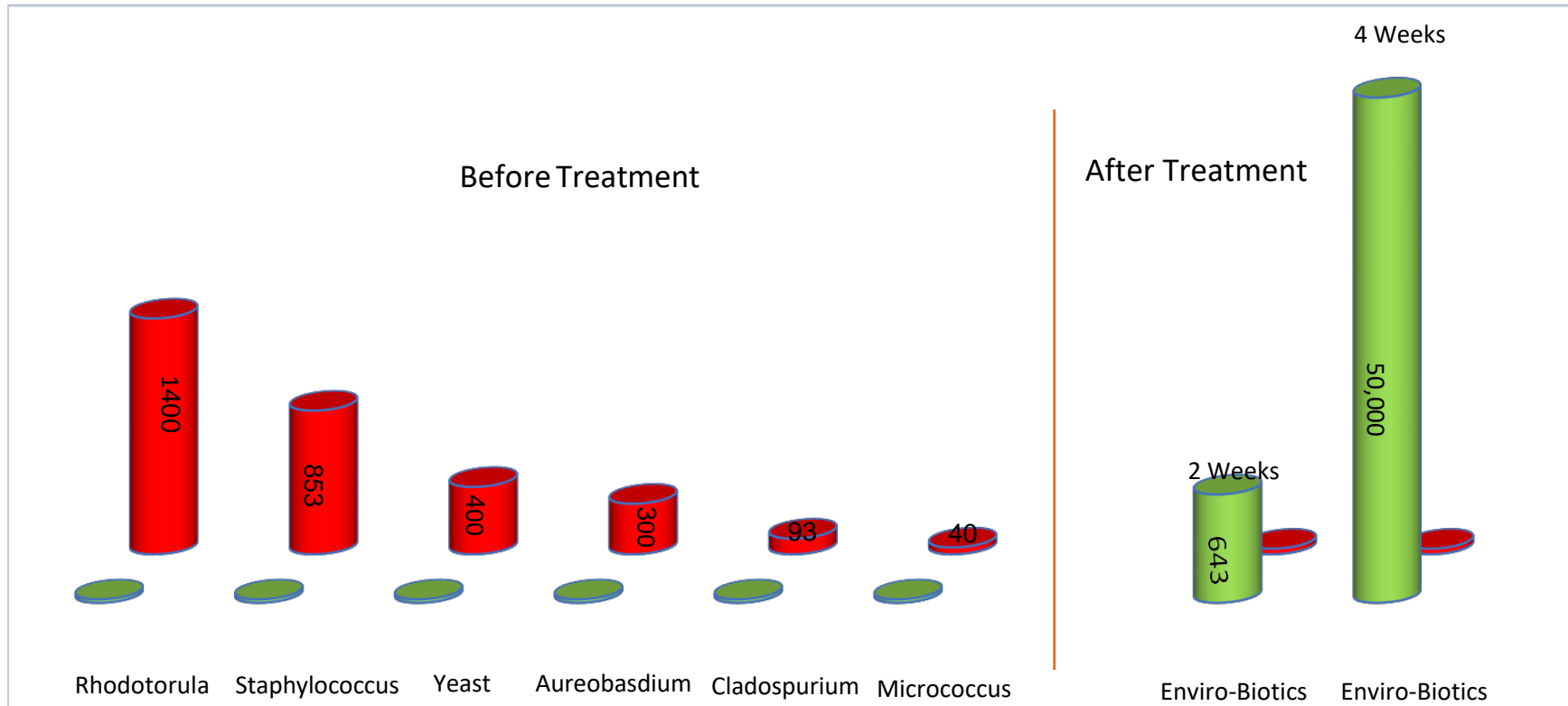
The primary goal had been the evaluation of betterair's effectiveness of its solutions, providing an initial insight to the feasibility of microbial load reduction (allergens, bacteria and mold) within the aircraft, and conclude whether betterair Enviro-Biotics® technology may lead to an increased prevention of infection development on flights.

Aircraft solution providers are not allowed to operate systems during flights, therefore need to rely on pre-flight treatment. betterair applied its Enviro-Biotics® by spraying immediately following the pre-flight cleaning processes of the EL AL maintenance crew. this required a high dosage in a short time. betterair met the challenge with custom-made, high-power handheld misting devices.

A summary of these few weeks of testing is provided below where the graphs depict the raw data analyzed by Hayes Microbial laboratories in the US, following collection of samples in the fuselage area – carpets, food trays, remote control devices, seats and toilets seats.

It is clearly evident that the high concentration of pathogens (the Red bars) exists prior to betterair treatment has virtually disappeared where beneficial microorganism of Enviro-Biotics® had taken their place making sure the pathogens have no vacancy to grow and prosper; it is an Ecological Restoration & Balancing well executed.

EIAl - Composite test of Air & Surfaces - Results of 2 & 4 weeks



The pathogens (in Red) before treatment* has initiated
After 2 & 4 weeks* of treatment betterair's Enviro-Biotics
Agents (in Green) dominates the space in lieu of the pathogens

* Hayes lab report Job EIAl-0

** Hayes lab report jobs EIAl 336 & 720



contact@hayesmicrobial.com
http://hayesmicrobial.com/

Analysis Report prepared for

Better Air International LLC

Unit 705, China Insurance Group Bldg 141 Des Voeux Road Central
Hong Kong,
Phone: 972-54-5551141

Job Name: EL AL
Date Sampled: 04-13-2017
Date Analyzed: 05-01-2017
Report Date: 05-01-2017

EPA Laboratory ID# VA01419



LAB #188863
AIHA EMPAT Lab ID# 188863



Mold License: LAB1021



License: #PH-0198



HAYES

MICROBIAL CONSULTING
3005 East Boundary Terrace, #F
Midlothian, VA 23112, USA
804.562.3435 Fax: 804.447.5562

Better Air International LLC
Unit 705, China Insurance Group Bldg, 141 Des
Voeux Road Central
Hong Kong,
Phone: 972-54-5551141

Culture Analysis
SOP #HMC103, #HMC104, #HMC105

HMC #17007210

Job Number: 031217-1	Job Name: ELAL-O	Date Collected: 03/12/2017
Collected by: Better Air International LLC		Date Received: 03/20/2017
Email: pinig@better-air.com		Date Reported: 03/27/2017

HMC ID Number: 17007210 - 1		Sample Media: Swab		Volume: 1.00		Reporting Limit: 100 cfu / cm2	
Sample ID Number: 1		Sample Name: Lavatory					
Organism	Type	Raw Count	cfu / cm2	% of Total	Note		
Yeast	Fungi	4	400	2%			
Gram Negative Fermenter	Bacteria	145	14500	78%			
Gram Negative non-Fermenter	Bacteria	30	3000	16%			
Staphylococcus sp.	Bacteria	8	800	4%			

HMC ID Number: 17007210 - 2		Sample Media: Swab		Volume: 1.00		Reporting Limit: 100 cfu / cm2	
Sample ID Number: 2		Sample Name: Comp Fuselage					
Organism	Type	Raw Count	cfu / cm2	% of Total	Note		
Aureobasidium	Fungi	3	300	2%			
Rhodotorula	Fungi	14	1400	7%			
Gram Negative Fermenter	Bacteria	50	5000	27%			
Gram Negative non-Fermenter	Bacteria	120	12000	64%			

HMC ID Number: 17007210 - 3		Sample Media: Air		Volume: 300.00		Reporting Limit: 3 cfu / M3	
Sample ID Number: 3		Sample Name: Comp Fuselage Bac					
Organism	Type	Raw Count	cfu / M3	% of Total	Note		
Bacillus	Bacteria	10	33	26%			
Micrococcus	Bacteria	12	40	32%			
Staphylococcus sp.	Bacteria	16	53	42%			

HMC ID Number: 17007210 - 4		Sample Media: Air		Volume: 300.00		Reporting Limit: 3 cfu / M3	
Sample ID Number: 4		Sample Name: Comp Fuselage Mold					
Organism	Type	Raw Count	cfu / M3	% of Total	Note		
Cladosporium	Fungi	28	93	100%			

Signature: P. Ramesh

Date: 03/27/2017

Reviewed by: Stephen N. Hayes

Date: 03/27/2017



HAYES

MICROBIAL CONSULTING
 3005 East Boundary Terrace, #F
 Midlothian, VA 23112, USA
 804.562.3435 Fax: 804.447.5562

Better Air International LLC
 Unit 705, China Insurance Group Bldg, 141 Des
 Voeux Road Central
 Hong Kong,
 Phone: 972-54-5551141

Culture Analysis
 SOP #HMC103, #HMC104, #HMC105

HMC #17008632

Job Number: 072817	Job Name: EI AL 336	Date Collected: 03/27/2017
Collected by: Better Air International LLC		Date Received: 04/03/2017
Email: pinig@better-air.com		Date Reported: 04/08/2017

HMC ID Number: 17008632 - 1		Sample Media: Swab		Volume: 1.00		Reporting Limit: 100 cfu / cm2	
Sample ID Number: 1		Sample Name: Lavatory					
Organism	Type	Raw Count	cfu / cm2	% of Total	Note		
Gram Negative non-Fermenter	Bacteria	195	19500	100%			
No Fungi Detected							

HMC ID Number: 17008632 - 2		Sample Media: Swab		Volume: 1.00		Reporting Limit: 100 cfu / cm2	
Sample ID Number: 2		Sample Name: Composite Fuselage					
Organism	Type	Raw Count	cfu / cm2	% of Total	Note		
Gram Negative non-Fermenter	Bacteria	110	11000	100%			
No Fungi Detected							

HMC ID Number: 17008632 - 3		Sample Media: Air		Volume: 350.00		Reporting Limit: 3 cfu / M3	
Sample ID Number: 3		Sample Name: Composite Fuselage BAC					
Organism	Type	Raw Count	cfu / M3	% of Total	Note		
Bacillus	Bacteria	225	643	100%			

HMC ID Number: 17008632 - 4		Sample Media: Air		Volume: 350.00		Reporting Limit: 3 cfu / M3	
Sample ID Number: 4		Sample Name: Composite Fuselage Mold					
Organism	Type	Raw Count	cfu / M3	% of Total	Note		
No Fungi Detected							

Signature: _____ Date: _____ Reviewed by: Stephen N. Hayes Date: 04/08/2017



HAYES

MICROBIAL CONSULTING
 3005 East Boundary Terrace, #F
 Midlothian, VA 23112, USA
 804.562.3435 Fax: 804.447.5562

Better Air International LLC
 Unit 705, China Insurance Group Bldg, 141 Des
 Voeux Road Central
 Hong Kong,
 Phone: 972-54-5551141

Culture Analysis
 SOP #HMC103, #HMC104, #HMC105

HMC #17010911

Job Number:	Job Name: EL AL 720	Date Collected: 04/13/2017
Collected by: Better Air International LLC		Date Received: 04/25/2017
Email: pinig@better-air.com		Date Reported: 05/01/2017

HMC ID Number: 17010911 - 1		Sample Media: Swab		Volume: 1.00		Reporting Limit: 100 cfu / in2	
Sample ID Number: 1		Sample Name: Lavatory					
Organism	Type	Raw Count	cfu / in2	% of Total	Note		
Bacillus	Bacteria	240	24000	100%			
No Fungi Detected							

HMC ID Number: 17010911 - 2		Sample Media: Swab		Volume: 1.00		Reporting Limit: 100 cfu / in2	
Sample ID Number: 2		Sample Name: Composite Fuselage Swab					
Organism	Type	Raw Count	cfu / in2	% of Total	Note		
Bacillus	Bacteria	255	25500	100%			
No Fungi Detected							

HMC ID Number: 17010911 - 3		Sample Media: Air		Volume: 500.00		Reporting Limit: 2 cfu / M3	
Sample ID Number: 3		Sample Name: Composite Fuselage Air Ba					
Organism	Type	Raw Count	cfu / M3	% of Total	Note		
Bacillus	Bacteria	190	380	100%			

HMC ID Number: 17010911 - 4		Sample Media: Air		Volume: 500.00		Reporting Limit: 2 cfu / M3	
Sample ID Number: 4		Sample Name: Composite Fuselage Air Mold					
Organism	Type	Raw Count	cfu / M3	% of Total	Note		
Cladosporium	Fungi	4	8	100%			

Signature: P. Ramesh

Date: 05/01/2017

Reviewed by: Stephen N. Hayes

Date: 05/01/2017

May 20, 2017

Mr. Yuli Horesh – VP of technology; Mr Michael Hoffman- CEO, Mr Amir Yaar

Re: Completion of testing of Better Air solutions on our 777 fleet

I appreciate your taking the last few months to assist us with our attempt to find effective and proven methods to improve the use of environment safety products.

El Al has been Learning of Better Air solutions, El Al has taken an interest in testing and surveys of our passengers and crew on our entire Boeing 777 fleet.

During the last 3 months, the crew and external experts had been collecting samples that gathered inside the planes on different times and conditions; these samples had been sent for microbial inspection at the Hayes Laboratories - an independent certified lab in Virginia USA, a lab with capacity to identify and quantify each pathogens and germ collected during our testing. Careful analysis of these results printed by Hayes and given to us at the first week of May, is clearly shows that Better Air E-Biotics (environmental probiotic) has been found effective in creating of a more balanced Indoor Microbiome inside the treated planes. The numerical values and comparison of the "before and after" treatment demonstrates a reduction of over 80-90 % of pathogenic microbiome (as of those known to man) .

The technical team of El Al is happy with these results and ready to expand the testing's of Better Air's E-Biotics products to our 737 fleet.

I appreciate all these that contribute time and efforts in this 3 months testing

Sincerely,

Nimrod Demajo

EL AL Israel Airlines LTD,
Inflight Service Div.