



INDIANA UNIVERSITY

SCHOOL OF DENTISTRY
Oral Health Research Institute
IUPUI

FINAL REPORT # 17-PCR-186

TITLE

DETERMINATION OF THE CLEANING ABILITY OF DENTIFRICES TO REMOVE STAINED PELLICLE

STUDY SPONSOR

WDS
20 Kulakova st. bldg. 1G
Moscow, IN 123592
Russia

Attention: Irina Lupina

CONDUCTING AGENCY

Indiana University School of Dentistry
Oral Health Research Institute
415 Lansing Street
Indianapolis, Indiana 46202-2876
Website: <http://www.ohrilab.dentistry.iu.edu/>

Study Director: Anderson T. Hara, DDS, MS, PhD
(317) 278-0577

Research Technician: Glynis Odle

PURPOSE

The purpose of this study was to determine the cleaning ability of 13 dentifrices to remove stained pellicle.

BACKGROUND

This laboratory test was developed in order to assess the ability of dentifrices to remove stained pellicle, i.e., to determine the cleaning ability of complete dentifrice formulations. Previous studies (J. Dent. Res., 61:1236, 1982) have indicated that the results of this test with dentifrice slurries compare favorably with those obtained in controlled clinical trials. Thus, the results of this test using dentifrice slurries may be considered to predict clinical findings with a reasonable degree of confidence.

TEST PRODUCTS

The products were provided and coded by the Sponsor. The Sponsor was responsible for the identity, strength, purity, and composition or other characteristics of the test products. The products tested in this study were assigned to groups by the OHRI technician and labeled as follows:

Group	Sample No.	Product
A	N/A	ADA Reference Material
B	Sample #1	R.O.C.S. Bold Blast of Double Mint
C	Sample #2	R.O.C.S. PRO Electro&Whitening
D	Sample #3	R.O.C.S. PRO Young&White Enamel
E	Sample #4	R.O.C.S. Teens Chocolate mousse
F	Sample #5	R.O.C.S. Kids Fruity cone
G	Sample #6	R.O.C.S. Caribbean Summer
H	Sample #7	R.O.C.S. Active calcium
I	Sample #8	R.O.C.S. Biocomplex
J	Sample #9	R.O.C.S. Amber 1
K	Sample #10	R.O.C.S. Amber 2
L	Sample #11	R.O.C.S. Amber 3
M	Sample #12	R.O.C.S. Dental polishing
N	Sample #13	R.O.C.S. PRO Sweet Mint

MATERIALS AND METHODS

Specimen Preparation

Bovine, permanent, central incisors were cut to obtain labial enamel specimens approximately 10 X 10 mm. The enamel specimens were embedded in an autopolymerizing methacrylate resin so that only the enamel surfaces were exposed. The enamel surfaces were then smoothed and polished on a lapidary wheel and lightly etched to expedite stain accumulation and adherence. They were placed on a rotating rod (~37°C incubator), which alternately exposed them to air and to a solution consisting of PGY broth, tea, coffee, mucin, FeCl₃, and *Micrococcus luteus*.¹

The staining broth was changed and specimens were rinsed daily until a uniform stain had accumulated. After approximately seven days, a darkly stained pellicle film was apparent on the enamel surfaces. Specimens were rinsed, allowed to air dry, and refrigerated until used. All products were tested using specimens prepared at the same time.

Scoring and Set-Up

The amount of *in vitro* stain was graded photometrically using only the L value of the L*a*b* scale using a spectrophotometer (Minolta CM2600d). The area of the specimens scored was a 1/4-inch diameter circle in the center of the 10 X 10 mm enamel. Specimens with scores between 30 and 42 (30 being more darkly stained) were used. On the basis of these scores, the specimens were divided into groups of 16 specimens each, with each group having approximately the same average baseline score.

Procedure

The specimens were mounted on a mechanical V-8 cross-brushing machine equipped with soft nylon-filament (Oral-B 40) toothbrushes. Tension on the enamel surface will be adjusted to 150 g. The dentifrices were tested as slurries prepared by mixing 25 grams of dentifrice with 40 ml of deionized water. The reference material was the ADA abrasion standard (10g/50ml of a 0.5% CMC solution). The specimens were brushed for 800 strokes (4 1/2 minutes).

To minimize mechanical variables, two specimens per group were brushed on each of the eight brushing heads. Different test products were used on each run, with one tube of slurry made up for each product. Fresh slurry was made after being used to brush four specimens. Following brushing, specimens were rinsed, blotted dry, and scored again for stain, as previously described.

¹ This solution had its original formulation (J. Dent. Res. 61:1236, 1982) modified by the addition of FeCl₃ and substitution of the PGY broth. FeCl₃ was added to compensate for the lower concentration of iron in the new type of gastric mucin that started being used, late in 1997. The supplier of *Micrococcus luteus* was changed in 2012, which lead to the substitution of PGY broth for trypticase soy broth for optimal growth.

Calculations

The difference between the pre- and post-brushing stain scores was determined and the mean and standard error calculated for the reference group in each study. The cleaning ratio for the reference material group was assigned a value of 100. The mean stain decrement for each reference group was then divided into 100 to obtain a constant value to multiple times each individual test decrement within the study. The individual cleaning ratio for each specimen was then calculated (decrement X constant). The mean and SEM for each group (N=16) were then calculated using the individual cleaning ratios. The larger the value of the cleaning ratio, the greater the amount of stained pellicle was removed in this test.

DATA MANAGEMENT AND ANALYSIS

Data was analyzed using a one-way analysis of variance model [Sigma Plot (12.0) Software]. Data was further analyzed doing all pairwise multiple comparison procedures (Student-Newman-Keuls method). All analyses were done with the significance level set at 0.05.

TIMETABLE

This study was conducted during February 5-9, 2018.

RECORDS MAINTAINED

OHRI will be responsible for the storage and destruction of the test products and specimens in accordance with standard operating procedures. The study raw data and documents will be maintained for a minimum of 4 months after Final Report approval. Electronic files of all study data and documents will be maintained for a minimum of 10 years.

COST

The cost for this study is \$11,960 USD.

RESULTS AND CONCLUSIONS

The results are summarized on the following table. In addition, the pre- and post-brushing score and calculations are on the attached tables. Missing values are due to outlier data.

ADA Reference Material and Sample #12/ R.O.C.S. Dental polishing were the most effective in stained pellicle removal.

There was a cascading effect with Sample #8/ R.O.C.S. Biocomplex, Sample #1/ R.O.C.S. Bold Blast of Double Mint, Sample #13/ R.O.C.S. PRO Sweet Mint, Sample #2/ R.O.C.S. PRO Electro&Whitening, Sample #7/ R.O.C.S. Active calcium, Sample #3/ R.O.C.S. PRO Young&White Enamel, Sample #4/ R.O.C.S. Teens Chocolate mousse, Sample #6/ R.O.C.S. Caribbean Summer and Sample #5/ R.O.C.S. Kids Fruity cone.

Sample #9/ R.O.C.S. Amber 1, Sample #10/ R.O.C.S. Amber 2 and Sample #11/ R.O.C.S. Amber 3 were the least effective.

SUMMARY OF PELLICLE CLEANING RATIO DATA ON DENTIFRICES

Dentifrice	N	Pellicle Cleaning Ratio
ADA Reference Material	15	100.00 ± 3.69* **
Sample #12/ R.O.C.S. Dental polishing	15	93.64 ± 3.02
Sample #8/ R.O.C.S. Biocomplex	16	81.47 ± 2.80
Sample #1/ R.O.C.S. Bold Blast of Double Mint	15	77.75 ± 2.36
Sample #13/ R.O.C.S. PRO Sweet Mint	16	74.07 ± 2.70
Sample #2/ R.O.C.S. PRO Electro&Whitening	16	71.72 ± 2.54
Sample #7/ R.O.C.S. Active calcium	16	68.56 ± 2.85
Sample #3/ R.O.C.S. PRO Young&White Enamel	15	66.69 ± 2.90
Sample #4/ R.O.C.S. Teens Chocolate mousse	15	62.66 ± 1.37
Sample #6/ R.O.C.S. Caribbean Summer	15	61.47 ± 2.63
Sample #5/ R.O.C.S. Kids Fruity cone	16	55.51 ± 2.22
Sample #9/ R.O.C.S. Amber 1	15	28.16 ± 0.94
Sample #10/ R.O.C.S. Amber 2	16	27.62 ± 1.14
Sample #11/ R.O.C.S. Amber 3	16	26.78 ± 1.20

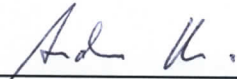
* Mean ± SEM

** Brackets denote no significant difference between groups (P>0.05)

FINAL REPORT APPROVALS

The following date and signature indicates that the Study Director has reviewed and approved the foregoing final report.

STUDY DIRECTOR



Anderson T. Hara, DDS, MS, PhD
Director, Laboratory Contract Testing Program

2-12-18


Date

The following date and signature indicates that the Quality Assurance Manager has reviewed and approved the foregoing final report. The Quality Assurance Manager report was submitted to the Study Director as follows:

<u>Phase</u>	<u>Date</u>
Data Audit	2/9/2018
Draft Report Review	2/9/2018
Report to Study Director and Management	2/9/2018

This Final Report accurately reflects the raw data.

QUALITY ASSURANCE



Robin Johnson, RHIA
Quality Assurance Manager

2/9/2018

Date

SPECIMEN	STUDY GROUP PRODUCT			17-PCR-186 <u>A</u> <u>ADA Reference</u>
	<u>Pre</u>	<u>L Value</u> <u>Post</u>	<u>Delta</u>	<u>Pellicle</u> <u>Cleaning</u> <u>Ratio</u>
202	30.1	56.3	26.3	96.9
149	31.5	53.9	22.4	82.9
162	*	*	*	*
143	32.6	62.0	29.4	108.4
233	32.6	54.8	22.2	81.9
10	33.6	63.2	29.6	109.3
99	33.6	66.2	32.7	120.6
176	34.2	67.2	33.0	121.7
259	34.3	59.0	24.8	91.4
135	35.0	61.0	26.0	95.8
157	35.1	60.3	25.3	93.3
168	36.0	64.1	28.1	103.7
17	36.0	65.9	30.0	110.6
199	36.9	65.7	28.8	106.2
68	37.0	65.8	28.8	106.4
119	41.4	60.6	19.2	71.0
MEAN	34.64	61.74	27.09	100.00
STD. DEV.	2.70	4.28	3.87	14.30
STD. ERR.	0.70	1.11	1.00	3.69

#162 was rejected due to outlier data

SPECIMEN	STUDY GROUP PRODUCT			17-PCR-186 B Sample #1 R.O.C.S. Bold Blast of Double Mint Pellicle Cleaning Ratio
	<u>Pre</u>	<u>L Value</u> <u>Post</u>	<u>Delta</u>	
47	30.2	52.4	22.3	82.2
125	31.5	55.6	24.1	88.9
265	31.6	49.3	17.7	65.2
52	32.6	54.9	22.3	82.3
272	32.6	51.5	18.9	69.9
187	*	*	*	*
96	33.6	55.5	21.9	80.9
267	34.2	49.9	15.7	57.8
173	34.3	56.1	21.9	80.7
39	35.0	54.1	19.1	70.5
154	35.1	59.8	24.6	91.0
195	36.0	59.9	24.0	88.4
46	36.0	56.8	20.9	77.0
161	36.9	57.9	21.0	77.5
136	37.0	57.0	19.9	73.6
108	40.6	62.5	21.9	80.7
MEAN	34.47	55.54	21.06	77.75
STD. DEV.	2.66	3.72	2.48	9.14
STD. ERR.	0.69	0.96	0.64	2.36

#187 was rejected due to outlier data

STUDY
GROUP
PRODUCT

17-PCR-186
C

Sample #2

R.O.C.S. PRO Electro&Whitening

SPECIMEN	<u>L Value</u>		<u>Delta</u>	Pellicle Cleaning <u>Ratio</u>
	<u>Pre</u>	<u>Post</u>		
5	30.2	51.3	21.2	78.1
98	31.4	53.2	21.8	80.5
11	31.6	55.6	24.0	88.5
118	32.6	55.9	23.3	86.0
93	32.6	53.3	20.7	76.3
260	33.5	52.9	19.4	71.5
191	33.6	48.2	14.7	54.1
217	34.2	52.7	18.5	68.5
203	34.3	56.5	22.2	81.9
206	35.0	53.2	18.3	67.4
131	35.1	50.7	15.6	57.6
150	35.9	54.8	18.9	69.6
170	36.1	55.3	19.3	71.1
271	36.8	54.3	17.4	64.3
179	37.1	57.4	20.4	75.2
254	39.7	55.1	15.4	57.0
MEAN	34.35	53.78	19.43	71.72
STD. DEV.	2.44	2.34	2.76	10.17
STD. ERR.	0.61	0.59	0.69	2.54

SPECIMEN	STUDY GROUP PRODUCT			17-PCR-186 D Sample #3 R.O.C.S. PRO Young&White Enamel
	<u>Pre</u>	<u>L Value</u> <u>Post</u>	<u>Delta</u>	<u>Pellicle</u> <u>Cleaning</u> <u>Ratio</u>
83	*	*	*	*
152	31.4	51.1	19.7	72.6
54	31.7	52.5	20.8	76.9
79	32.5	49.4	16.9	62.5
240	32.6	51.7	19.0	70.2
197	33.5	54.7	21.2	78.1
110	33.6	49.5	15.8	58.5
70	34.2	48.0	13.9	51.2
184	34.3	51.9	17.6	64.9
180	34.9	55.8	20.9	77.2
198	35.1	53.7	18.6	68.7
236	35.8	48.7	12.8	47.4
49	36.1	54.4	18.3	67.6
216	36.8	56.3	19.5	71.9
153	37.1	60.0	22.8	84.3
193	39.5	52.7	13.1	48.5
MEAN	34.62	52.69	18.07	66.69
STD. DEV.	2.21	3.24	3.04	11.23
STD. ERR.	0.57	0.84	0.79	2.90

#83 was rejected due to outlier data

SPECIMEN	STUDY GROUP PRODUCT			17-PCR-186 E Sample #4 R.O.C.S. Teens Chocolate mousse
	<u>Pre</u>	<u>L Value</u> <u>Post</u>	<u>Delta</u>	<u>Pellicle</u> <u>Cleaning</u> <u>Ratio</u>
147	30.5	49.6	19.2	70.7
89	*	*	*	*
74	31.8	49.4	17.7	65.2
7	32.5	49.5	17.0	62.7
258	32.7	50.4	17.7	65.2
120	33.5	51.4	17.9	66.0
253	33.7	49.5	15.9	58.7
16	34.2	53.7	19.5	72.1
95	34.3	52.6	18.3	67.4
169	34.9	51.0	16.1	59.3
127	35.2	51.2	16.0	59.1
232	35.8	51.1	15.3	56.5
140	36.1	50.2	14.1	52.0
159	36.8	53.3	16.5	61.0
86	37.1	53.8	16.6	61.4
77	39.4	56.3	16.9	62.5
MEAN	34.55	51.53	16.98	62.66
STD. DEV.	2.29	2.01	1.44	5.31
STD. ERR.	0.59	0.52	0.37	1.37

#89 was rejected due to outlier data

STUDY
GROUP
PRODUCT

17-PCR-186

E

Sample #5

R.O.C.S. Kids Fruity cone

SPECIMEN	<u>L Value</u>		<u>Delta</u>	<u>Pellicle Cleaning Ratio</u>
	<u>Pre</u>	<u>Post</u>		
8	30.5	46.5	16.0	59.1
227	31.4	47.9	16.5	60.9
105	31.8	46.0	14.2	52.4
263	32.4	44.8	12.4	45.8
256	32.8	44.5	11.7	43.2
37	33.5	49.1	15.6	57.5
80	33.7	49.1	15.4	56.7
91	34.1	49.2	15.0	55.4
117	34.4	54.1	19.7	72.7
71	34.9	52.9	18.0	66.4
214	35.2	49.8	14.6	54.0
57	35.8	53.4	17.6	65.1
188	36.1	49.5	13.4	49.5
219	36.7	47.7	10.9	40.3
111	37.2	53.9	16.7	61.6
25	39.4	52.2	12.9	47.5
MEAN	34.37	49.41	15.04	55.51
STD. DEV.	2.35	3.16	2.40	8.87
STD. ERR.	0.59	0.79	0.60	2.22

SPECIMEN	STUDY GROUP PRODUCT			17-PCR-186 <u>G</u> Sample #6 R.O.C.S. Caribbean Summer Pellicle Cleaning <u>Ratio</u>
	<u>Pre</u>	<u>L Value</u> <u>Post</u>	<u>Delta</u>	
32	30.5	43.9	13.4	49.4
239	31.3	43.1	11.8	43.4
3	31.9	52.7	20.8	76.9
171	32.4	51.4	19.0	70.0
213	32.8	48.3	15.5	57.2
235	33.5	51.9	18.4	67.8
207	33.7	53.9	20.2	74.6
234	34.1	48.0	13.9	51.2
56	34.4	54.1	19.7	72.8
189	34.9	52.0	17.0	62.8
29	*	*	*	*
165	35.8	48.9	13.2	48.6
205	36.2	54.1	18.0	66.4
138	36.7	52.8	16.0	59.2
78	37.3	54.3	17.0	62.9
177	39.3	55.3	15.9	58.8
MEAN	34.32	50.97	16.65	61.47
STD. DEV.	2.42	3.77	2.76	10.19
STD. ERR.	0.62	0.97	0.71	2.63

#29 was rejected due to outlier data

SPECIMEN	STUDY GROUP PRODUCT			17-PCR-186 H Sample #7 R.O.C.S. Active calcium Pellicle Cleaning Ratio
	<u>Pre</u>	<u>L Value</u> <u>Post</u>	<u>Delta</u>	
66	30.6	43.5	13.0	47.9
148	31.3	53.0	21.7	79.9
244	31.9	55.3	23.4	86.5
76	32.4	48.2	15.8	58.3
134	32.8	50.1	17.3	63.9
36	33.4	56.6	23.1	85.4
204	33.7	51.6	17.9	66.0
249	34.0	48.3	14.3	52.6
266	34.4	53.9	19.5	72.0
64	34.9	56.2	21.3	78.5
55	35.2	53.0	17.8	65.7
40	35.7	55.6	19.9	73.4
209	36.2	53.9	17.8	65.5
228	36.7	57.8	21.1	77.7
270	37.5	55.8	18.3	67.4
35	38.8	54.0	15.2	56.1
MEAN	34.35	52.93	18.57	68.56
STD. DEV.	2.29	3.77	3.08	11.38
STD. ERR.	0.57	0.94	0.77	2.85

SPECIMEN	STUDY GROUP PRODUCT			17-PCR-186 ↓ Sample #8 R.O.C.S. Biocomplex Pellicle Cleaning Ratio
	<u>Pre</u>	<u>L Value</u> <u>Post</u>	<u>Delta</u>	
212	30.6	54.6	24.0	88.5
215	31.3	50.6	19.4	71.5
38	31.9	55.6	23.7	87.6
166	32.4	54.4	22.0	81.2
45	32.8	59.3	26.5	97.9
92	33.4	58.9	25.5	94.0
87	33.7	60.0	26.3	97.2
107	34.0	56.1	22.1	81.6
116	34.4	51.0	16.5	61.1
44	34.9	56.0	21.1	77.8
19	35.3	59.9	24.6	90.9
73	35.7	59.0	23.3	86.1
1	36.2	55.7	19.5	71.8
264	36.7	57.6	20.9	77.1
2	37.6	58.1	20.6	76.0
175	38.7	55.8	17.1	63.1
MEAN	34.35	56.42	22.07	81.47
STD. DEV.	2.29	2.86	3.03	11.19
STD. ERR.	0.57	0.72	0.76	2.80

SPECIMEN	STUDY GROUP PRODUCT			17-PCR-186 ↓ Sample #9 R.O.C.S. Amber 1 Pellicle Cleaning Ratio
	<u>Pre</u>	<u>L Value</u> <u>Post</u>	<u>Delta</u>	
230	30.6	37.1	6.5	24.1
246	31.1	39.6	8.5	31.3
185	*	*	*	*
237	32.4	39.7	7.4	27.2
24	32.8	41.0	8.2	30.2
84	33.4	41.5	8.1	29.9
18	33.7	40.0	6.3	23.2
141	34.0	40.6	6.6	24.3
14	34.5	43.4	8.9	32.8
94	34.9	41.2	6.3	23.4
33	35.3	43.1	7.8	28.8
167	35.6	45.0	9.4	34.6
106	36.2	43.9	7.7	28.5
220	36.6	43.3	6.7	24.6
201	37.6	46.2	8.6	31.8
172	38.6	46.1	7.5	27.8
MEAN	34.49	42.12	7.63	28.16
STD. DEV.	2.27	2.61	0.99	3.65
STD. ERR.	0.59	0.67	0.26	0.94

#185 was rejected due to outlier data

SPECIMEN	STUDY GROUP PRODUCT			17-PCR-186 <u>K</u> Sample #10 R.O.C.S. Amber 2 Pellicle Cleaning <u>Ratio</u>
	<u>Pre</u>	<u>L Value</u> <u>Post</u>	<u>Delta</u>	
121	30.6	36.9	6.2	23.0
200	31.1	39.4	8.3	30.6
144	32.1	41.3	9.2	34.1
6	32.4	41.5	9.2	33.9
181	32.8	39.2	6.4	23.6
9	33.2	40.4	7.2	26.4
251	33.7	42.3	8.6	31.8
243	33.9	42.0	8.1	29.7
26	34.5	39.7	5.1	19.0
231	34.8	41.2	6.4	23.7
15	35.3	41.5	6.2	22.9
30	35.6	43.5	7.9	29.2
23	36.3	43.2	6.9	25.6
192	36.6	43.5	6.9	25.6
196	37.6	45.6	8.0	29.4
156	38.6	47.7	9.1	33.5
MEAN	34.32	41.80	7.48	27.62
STD. DEV.	2.27	2.59	1.23	4.55
STD. ERR.	0.57	0.65	0.31	1.14

SPECIMEN	STUDY GROUP PRODUCT			17-PCR-186 └ Sample #11 R.O.C.S. Amber 3 Pellicle Cleaning Ratio
	<u>Pre</u>	<u>L Value</u> <u>Post</u>	<u>Delta</u>	
221	30.7	36.6	5.9	21.8
226	31.1	38.6	7.5	27.7
252	32.1	40.4	8.3	30.5
186	32.4	37.9	5.6	20.6
97	32.9	40.3	7.4	27.4
255	33.2	40.4	7.2	26.7
126	33.7	42.1	8.4	31.0
261	33.9	41.7	7.9	29.0
62	34.5	43.9	9.4	34.8
151	34.8	42.3	7.5	27.6
268	35.3	41.2	5.9	21.9
100	35.5	41.6	6.1	22.5
67	36.3	44.7	8.4	31.1
129	36.5	42.1	5.6	20.6
63	37.6	46.8	9.2	33.9
51	38.4	44.2	5.8	21.3
MEAN	34.30	41.56	7.25	26.78
STD. DEV.	2.25	2.62	1.30	4.79
STD. ERR.	0.56	0.65	0.32	1.20

SPECIMEN	STUDY GROUP PRODUCT			17-PCR-186 <u>M</u> Sample #12 R.O.C.S. Dental polishing Pellicle Cleaning <u>Ratio</u>
	<u>Pre</u>	<u>L Value</u> <u>Post</u>	<u>Delta</u>	
139	30.7	51.7	21.1	77.8
85	31.1	59.1	28.1	103.6
42	32.1	59.6	27.5	101.5
145	*	*	*	*
115	32.9	64.6	31.7	117.0
146	33.1	55.5	22.4	82.5
13	33.7	59.4	25.7	94.8
137	33.9	60.9	27.0	99.7
21	34.6	59.3	24.7	91.2
247	34.8	62.3	27.5	101.6
50	35.3	63.9	28.6	105.7
158	35.5	61.1	25.6	94.6
155	36.3	62.0	25.6	94.7
75	36.5	59.1	22.5	83.2
34	37.7	58.8	21.1	78.0
208	38.4	59.7	21.3	78.8
MEAN	34.44	59.81	25.37	93.64
STD. DEV.	2.27	3.16	3.17	11.68
STD. ERR.	0.59	0.82	0.82	3.02

#145 was rejected due to outlier data

SPECIMEN	STUDY GROUP PRODUCT			17-PCR-186 N Sample #13 R.O.C.S. PRO Sweet Mint Pellicle Cleaning Ratio
	<u>Pre</u>	<u>L Value</u> <u>Post</u>	<u>Delta</u>	
123	30.7	49.9	19.2	70.7
262	31.1	51.7	20.7	76.2
182	32.1	49.8	17.7	65.5
183	32.3	55.8	23.5	86.8
238	33.0	52.8	19.9	73.3
250	33.1	52.2	19.1	70.5
65	33.8	59.5	25.8	95.2
128	33.8	51.9	18.1	66.6
31	34.6	58.8	24.2	89.3
242	34.8	53.3	18.5	68.3
245	35.3	57.6	22.3	82.4
113	35.4	56.7	21.3	78.6
122	36.3	57.8	21.5	79.3
164	36.5	51.4	14.9	54.9
48	37.8	54.2	16.5	60.8
223	38.3	56.3	18.1	66.7
MEAN	34.30	54.37	20.07	74.07
STD. DEV.	2.24	3.18	2.92	10.79
STD. ERR.	0.56	0.79	0.73	2.70