

# Collagen Enhancement Therapy in Mouse (2006) (IPL vs. MicroNeedling)

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## **IPL VS. micro-needling**



**Skin thickness (calipers)**

**Microscopic evaluation (MT stain)**

**Collagen quantitative analysis**



**Collagen synthesis?**

# Material and Method

1. Mouses, total: 54 (Control:18 / IPL:18 / MicroNeedling:18)
2. IPL, Intense pulsed light (Ellipse, DDD, Denmark)
3. Micro-needling (Microneedle roller)
4. Caliper Pocket thickness gage (MituyotoTM, Mituyoto corp., Japan)
5. MT staining
6. ELISA, Sircol Collagen kit (Biocolor Ltd., Belfast Northern Ireland)

# Treatments & Testdata

Three treatments were made with both methods.

First treatment were made day 1, second treatment, day 14 and third treatment were made day 28.

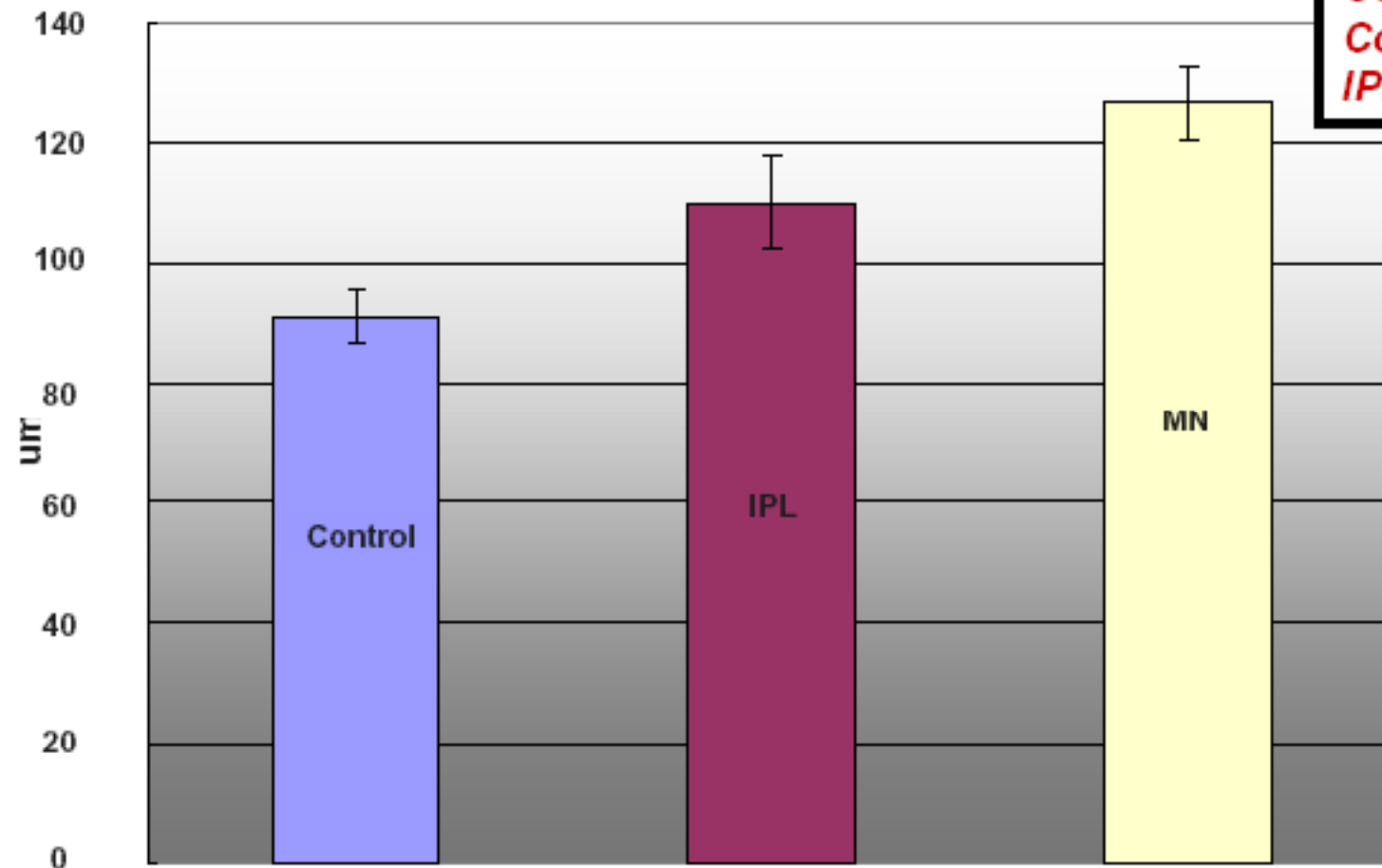
All testdata were collected day 56,  
28 days after the last treatment.

**Result**

# Skin thickness (um)

control	IPL	Micro-needling
93	92	113
95	127	129
110	86	123
80	102	127
102	100	106
84	118	127
93	101	128
80	113	113
82	111	133
82	97	117
88	107	132
104	110	123
95	108	128
104	132	133
86	128	110
87	86	153
86	137	146
87	125	138

# Skin thickness



*p-value*  
**Control-IPL: 0.000**  
**Control-MN: 0.000**  
**IPL-MN: 0.001**

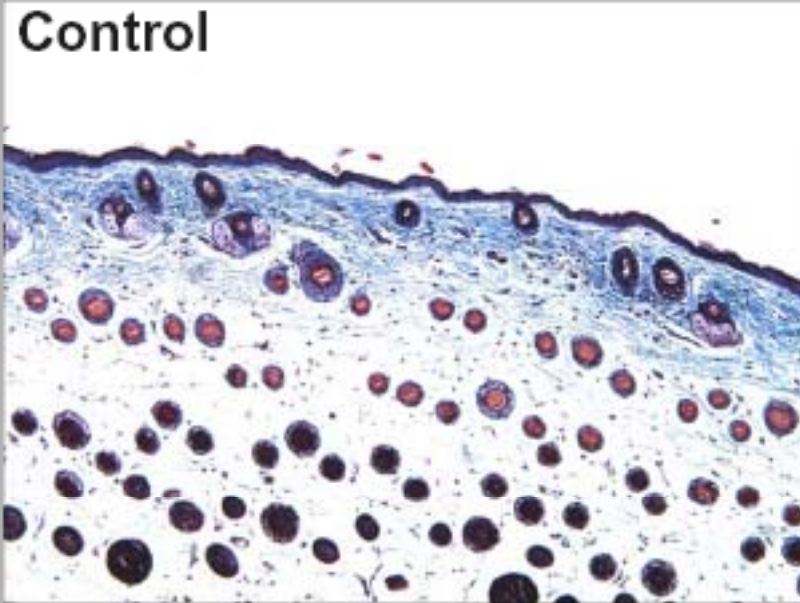
**91.0±4.5**

**110.0±7.7**

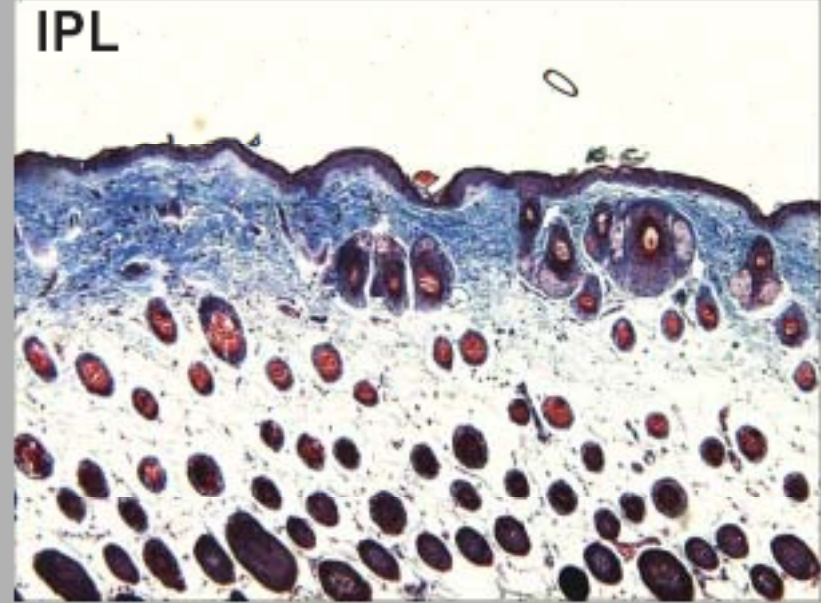
**126.7±6.1**

# Histology ( MT stain , X 100)

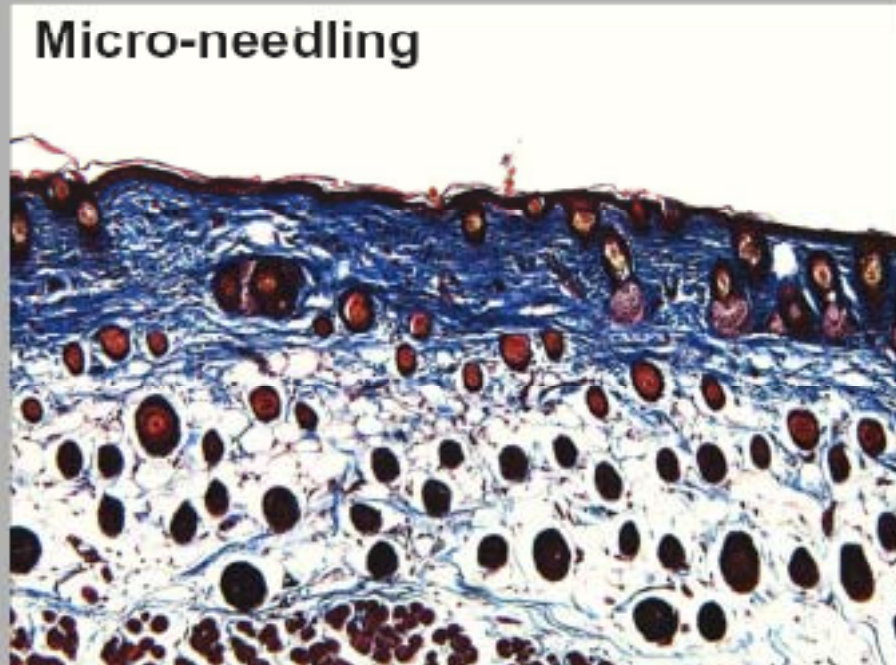
**Control**



**IPL**



**Micro-needling**

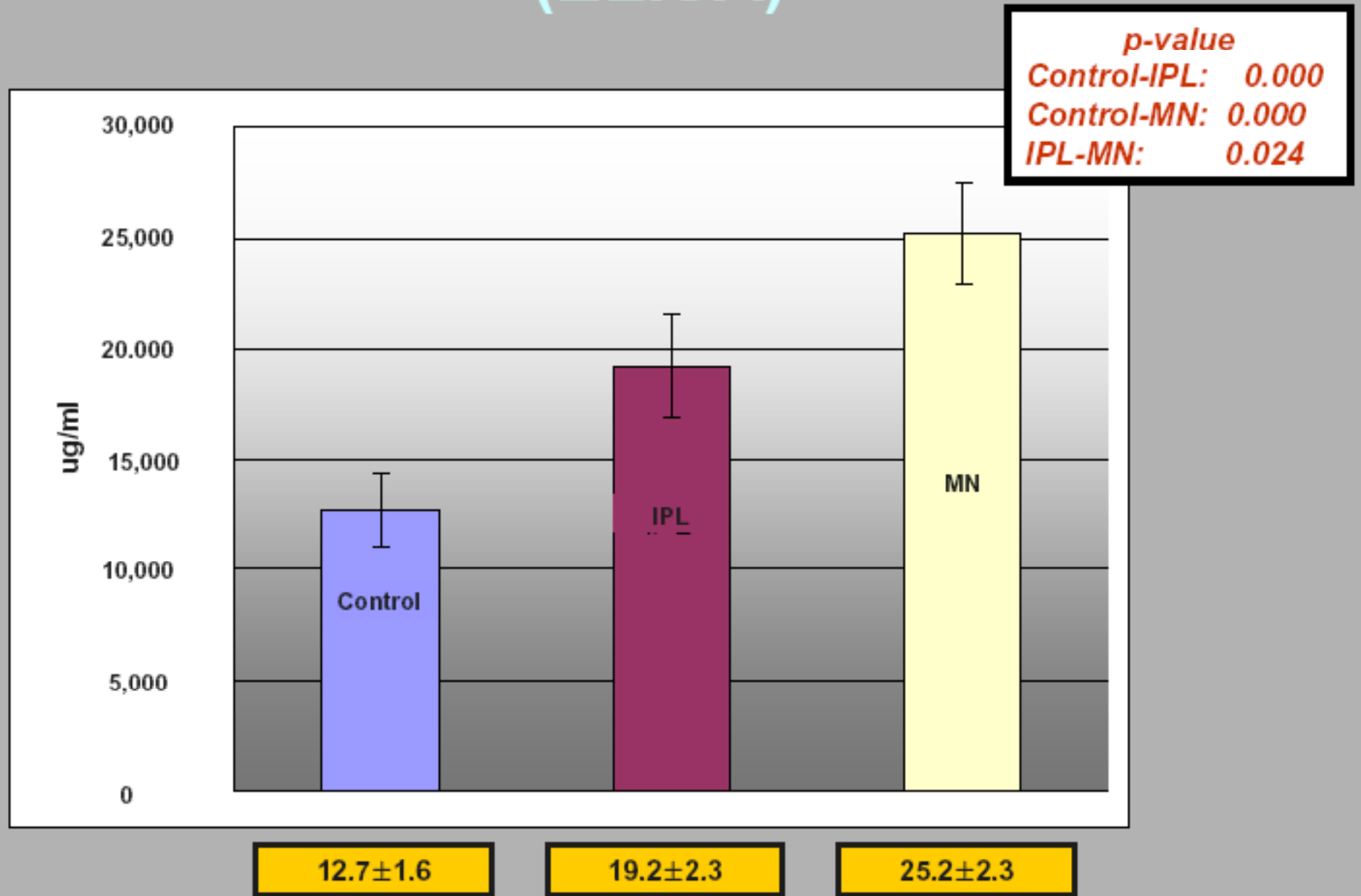




# Collagen quantitative analysis (ELISA)

control	IPL	Micro-needling
13.873	22.298	23.600
13.683	21.957	53.300
16.027	15.069	20.877
12.275	21.776	16.108
7.470	17.425	26.460
14.101	29.545	41.100
10.749	13.702	23.768
18.218	23.094	21.886
19.957	17.606	12.921
10.796	19.176	31.921
16.111	9.756	21.080
8.636	15.165	20.225
10.253	17.554	19.683
11.032	20.425	29.178
9.757	16.298	18.916
11.790	18.642	21.909
12.180	24.741	20.448
11.791	21.253	29.942

# Collagen quantitative analysis (ELISA)



# Conclusion

**Skin thickness** increased **40%** with **microneedling** after only 8 weeks. With IPL skin thickness increased 21%.

**Collagen fiber quantity** increased **99%** with **microneedling**. With IPL collagen fiber quantity increased 51%.

This study shows that both microneedling and IPL can increase both skin thickness and collagen fiber quantity.