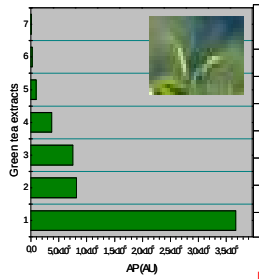
THE ANTIOXIDATIVE POWER AP of NATURAL ACTIVES AND FINAL FORMULATIONS AND THEIR EFFICACY TO PREVENT FREE RADICALS IN SKIN

Free radicals are involved in a manifold of physiological processes.
The disbalance of the radical status may lead to important physiological injuries and is mainly responsible for ageing processes.
The most important defence systems against free radicals are **antioxidants**.
The method **AP (Antioxidative Power),** based on Electron Spin Resonance (ESR) spectroscopy, is able to determine the antioxidant capacity and reactivity of raw materials and finished products. Many cosmetic products claim their antioxidative content, but 73% of these products (N=37) has no or negligible Antioxidative Power.
Three steps are necessary to prepare a highly efficient antioxidative cosmetic product:

1. Selection of the raw materials;
2. Formulation by maintaining the activity
3. Testing the efficacy on skin.

1. CHOOSING THE RIGHT ANTIOXIDATIVE INGREDIENT

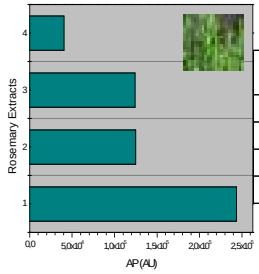
Green Tea extracts
Camellia sinensis



Extract	AP (AU)	t_r (min)
1	3,67 x 10^6	0,39
2	815149	0,44
3	750000	0,41
4	375950	0,39
5	95229	0,36
6	26100	0,77
7	6215	0,41

Differences: 600 fold

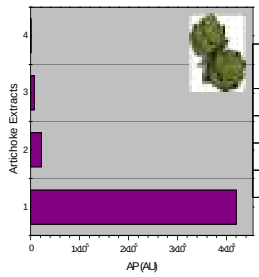
Rosemary extracts
Rosmarinus officinalis



Extract	AP (AU)	t_r (min)
1	243500	0,75
2	124712	0,38
3	124126	0,24
4	40326	0,68

Differences: 495 fold

Artichoke extracts
Cynara scolymus

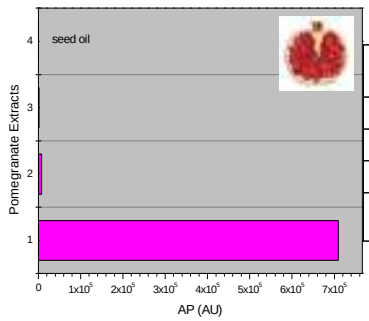


Extract	AP (AU)	t_r (min)
1	420600	0,21
2	22299	0,69
3	8019	0,67
4	854	0,75

Differences: 6 fold

2. PREPARING A FINAL FORMULATION WITH HIGH ANTIOXIDATIVE ACTIVITY

Pomegranate extracts
Punica granatum



Extract	AP (AU)	t_r (min)
1	709567	0,40
2	8012	0,77
3	1940	0,75
4	570 (seed oil)	0,53

Differences: 365 fold

Used to prepare cosmetic formulations containing 1 % active pomegranate extract

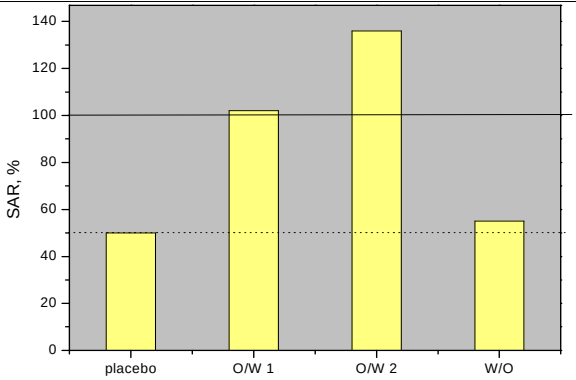
O/W 1
Cremor basalis

O/W 2
Unguentum emulsificans aquosum

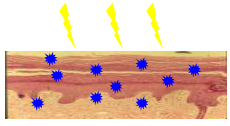
W/O
Lanae alcoholum unguentum

1% pomegranate in formulations	O/W 1	O/W 2	W/O
Antioxidative Power (AP) reaction time t_r	3.730 AU 0,79 min	5.710 AU 0,49 min	4.190 AU 0,62 min
Recovery (%)	1	1	0,9

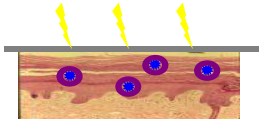
3. PROOVING THE ANTIOXIDATIVE EFFICACY ON THE SKIN



To be active inside the skin, the antioxidants have to penetrate into the living layers of the skin, where free radicals are generated and should be effective against ROS.
The SAR (Skin Antioxidative Retention) method enables to investigate the protective effect of topically applied antioxidants. The O/W 2 formulation containing 1 % pomegranate extract protects against 86 % of UV-induced free radicals inside the skin.



without protection



2° defence: antioxidants

Gematria Test Lab GmbH - Pestalozzistr. 5-8 - 13187 Berlin - +49 (0)30 43737764 - email@gematria-test-lab.com - www.gematria-test-lab.com