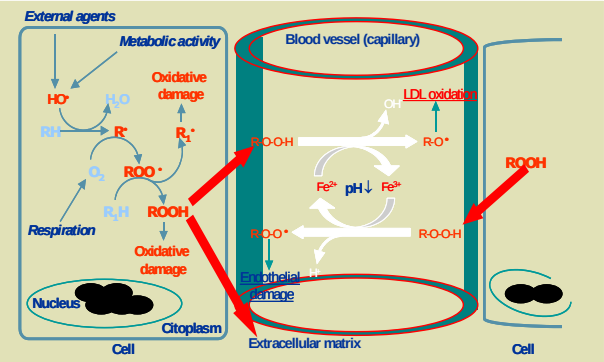
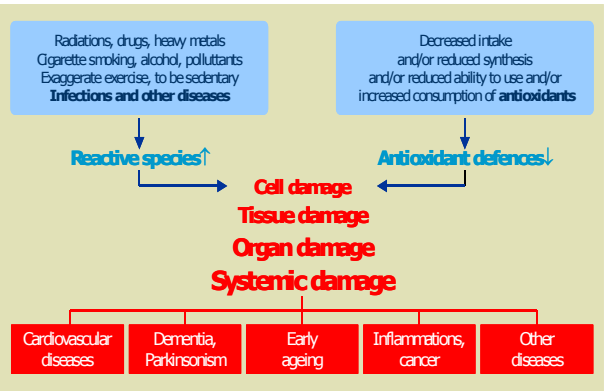
NEWS FROM RESEARCH

FRAS 4 EVOLVO
AND
THE GLOBAL ASSESSMENT
OF
OXIDATIVE STRESS

H&D srl

THE GLOBAL ASSESSMENT OF OXIDATIVE





In all living organisms there is a fragile balance between the production and the elimination of free radicals sthrough the activity of the antioxidant system.

The loss of this balance, indicate as oxidative stress, causes the start of cellular lesions. If these cellular lesions are severe and continue in time, the outcome will be an accelleration of the natural aging process and the onset of many diseases.

Oxidative stress = Cellular damage
Cellular damage = Tissue damage
Tissue damage = Organ damage
Organ damage = Disease
Disease = Prescription drug

it is obvious that is already too late when you intervene on the recognized pathology. You must even accept that to cure this pathology it is probable to have damaging side effects.

The winning strategy is to intervene since the very beginning when the cellular damage originates, that is whenoxidative stress starts to manifest and therefore it is measurable.

H&D makes it possible to intervene in this preventive direction, making available to doctors and health operators the FRAS 4 Evolvo which allows a global evaluation of oxidative stress through the d-ROMs test and the BAP test, both internationally recognized, and the new SAT test.

The d-ROMs and the BAP test can be carried in real time in the rooms of the medical doctor and make possible a precise and reliable diagnosis of oxidative stress. The two overlapping components of oxidative stress, the pro and anti-oxidant components, will be evaluated singulary and the meaning of their possible combination carefully considered.

Everybody should take the "Oxidative Stress Global Evaluation" in the healthy conditions or in there is an exposition to pro-oxidation elements (i.e. unhealthy life stile, environment pollution…) or if there is some chronic pathology (i.e. diabetes, atherosclerosis, dementia, rheumatic arthritis…) or if there the impelling necessity to have some treatments (i.e. dialysis, by-pass, organ transplantation, contraceptive pill, radiotherapy, chemiotherapy…).

It is possible only through the Oxidative Stress Global Evaluation to optimize and monitor the real efficacy of antioxidant formulations, which too often are taken by the individuals without assessing the ral necessity of it.

STRESS IN THE CLINICAL PRACTICE

the **d-ROMs test** is a realiable, repeatable and precise test which allows the determination of the pro-oxidant status of a living being through the measurement of the haematic concentration of the ROS (Reactive Oxygen Metabolites = Free Radicals).

Italian CNR (National Centre for Research) has confirmed the complete superimpositions of the values of free radicals obtained with the d-ROMs test and with the "golden standard" ESR (Electron Spin Resonance).

The result are expressed in carratelli Units, in short U Carr, which are the measuring units for the free radicals, adopted and recognized by the international scientific community.

To carry out the d-ROMs test is necessary a little drop of capillary blood (20 micro-litre) taken from the fingertip.
The d-ROMs kit contains all the necessary items to carry out 50 test.

The **BAP test** is a reliable, repeatable and precise test which allows determining the haematic concentration of the anti-oxidant compounds.
The BAP test has been validated through the comparison with the "golden standard" (ESR – Electron Spin Resonance) and it is a test able to determinate in a specific manner the scavenging/antioxidant activities in living beings.

To carry out the BAP test you need 10 mocro-litres of plasma obtained by the centrifugation of on edrop of capillary blood taken from the fingertip.
The BAP kit contains all the necessary items to carry out 50 test.

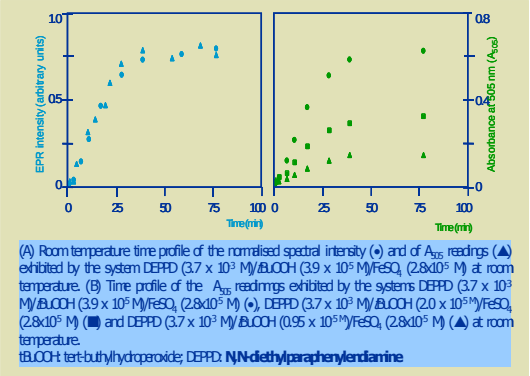
The SAT test (Saliva Antioxidant Test) is the new reliable, repeatable and precise test which allows determining the concentration of the anti-oxidant compounds in the saliva.

The d-Roms test and the SAT test are covered by international patents.

The interpretation of the values of d-ROMs test, of BAP test and of SAT test is delegated to the doctor.
The crossing of these two values (normal, low or high) must be interpreted with the help of the Guide Lines (available now to the doctor), preparated by Pro. Eugenio Luigi Iorio, President of the International Observatory of Oxidative Stress.
This interpretation leads to the diagnosis of oxidative stress.

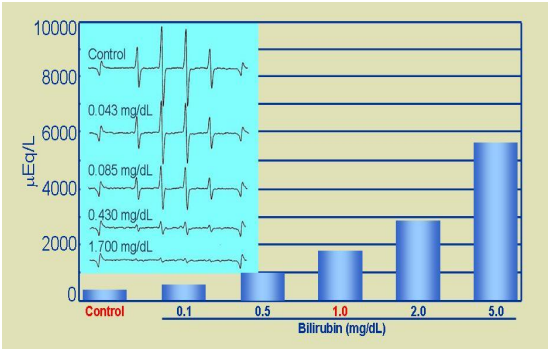
Win OS Manager:
A specific software has been created to help the doctor in the diagnosis: Win os Manager which allows to:
- save and file all the results of the tests
- interpret the situation and the risk of oxidative stress
- consider the whole clinical situation of that particular patient in relation to the result obtained
- highlight the date for the next oxidative stress check up
- print out diversified reports for the doctor and for the patient

d-ROMs test REFERENCE VALUES	
250-300	Normal range
300-320	**Border condition**
321-340	**Low** level of oxidative stress
341-400	**Middle** level of oxidative stress
401-500	**High** level of oxidative stress
> 500	**Very high** level of oxidative stress
Unit of measurement U. Carr 1 U. Carr = 0.08 mg H_2O_2/dl	



(A) Room temperature time profile of the normalised spectral intensity (•) and of A_{505} readings (▲) exhibited by the system DEPPD (3.7×10^{-3} M)/tBuOOH (3.9×10^{-5} M)/$FeSO_4$ (2.8×10^{-5} M) at room temperature. (B) Time profile of the A_{505} readings exhibited by the systems DEPPD (3.7×10^{-3} M)/tBuOOH (3.9×10^{-5} M)/$FeSO_4$ (2.8×10^{-5} M) (•), DEPPD (3.7×10^{-3} M)/tBuOOH (2.0×10^{-5} M)/$FeSO_4$ (2.8×10^{-5} M) (■) and DEPPD (3.7×10^{-3} M)/tBuOOH (0.95×10^{-5} M)/$FeSO_4$ (2.8×10^{-5} M) (▲) at room temperature.
tBuOOH: tert-butylhydroperoxide; DEPPD: **N,N-diethylparaphenylendiamine**

BAP test REFERENCE VALUES	
2200 – 4000	Optimum value
2200 – 2000	Border line
2000 – 1800	Moderate shortage
1800 – 1600	Shortage
1600 – 1400	Severe shortage
< 1400	Veri severe shortage
µMol/L	



FRAS 4 EVOLVO – FREE RADICAL ANALYTICAL SYSTEM

FRAS 4 EVOLVO is the latest creation of H & D, available to doctors and health workers, which allows evaluation of oxidative stress in a comprehensive manner through d-ROMs test and BAP test.

FRAS 4 EVOLVO is a dedicated photometer with an incorporate centrifuge that allows the operator to make the d-ROMs test and the BAP test in a simple and self-guided way by messages that appear on the display.

FRAS 4 EVOLVO, through is printer, prints a ticket that shows the values obtained and the date of the test. The ticket can be personalized with the name and the address of the doctor.

FRAS 4 EVOLVO can upgrade its software and add new tests from a PC via USB connection.

Technical features:

Dimension	39 x 26 x 12 cm
Weight	Approx 3,9 kg
Power supply	100 ÷ 240 VAC, 50 ÷ 60 Hz
Spectral region	505 nm obtained with interferential filter
Measuring principle	Absorbance. Lambert Beer law.
Reading cell	37°C real time dispayed
Centrifuge	
Speed	6000 r. p. m. ± 5%
Temperature	37°C real time dispayed
Software	
Program	Resident on FLASH memory
Interface	RS 232 with 9 poles for PC connection
Display	Back lighted alphanumeric LCD
Printer	
Type	Graphic, thermic, with 192 dots per line
Result	Automatic printout
Autodiagnosis	Automatic error display
Safety	DIRECTIVE 73/23/CEE
Electromag. Compat.	DIRECTIVE 89/336/CEE
Regulations: CEI-EN 61010-1, Classe I, Categ. Instal. II	

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