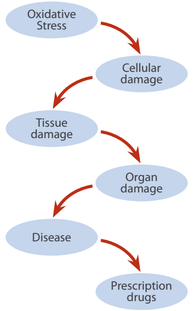
OXIDATIVE STRESS

Crisis Intervention model:



The body maintains a delicate balance between the presence of free radicals working to oxidize toxic compounds, and its own antioxidant defence systems.

When this balance is upset, a condition known as "Oxidative Stress" results, indicated by the appearance of lesions on cell walls and membranes.
If unchecked, Oxidative Stress can lead to accelerated aging, and to a greatly increased risk of disease.

The earliest possible diagnosis of Oxidative Stress, at the onset of cellular damage, is now a reality with H&D's FRAS 4 Evolvo.

SCIENTIFIC VALIDATION OF FRAS 4 Evolvo

Supported by over 600 scientific references

Areas of interest and some applications of d-ROMs test in oxidative stress assessment , according to the currently available scientific literature

Medical field	Conditions in which the d-ROMs test has been used
• Aesthetic medicine	Skin ageing
• Alternative medicine	Ozone-therapy; effects os transcutaneous ginkgo biloba administration
• Bronchopneumology	Chronic obstructive pulmonary diseases and other respiratory diseases
• Cardiology and angiology	Blood hypertension; coronary heart disease; venous insufficiency; atherosclerosis
• Gastroenterology	Crohn's disease
• Geriatrics	Ageing related diseases; senile dementia
• Hematology	Mielodysplastic syndromes; thrombophilic syndrome; staminal cell transplantations
• Hepatology	Liver diseases
• Homeopathic medicine	Primary lymphoedema of low extremities
• Infectious diseases	AIDS
• Neonatology and pediatrics	Post-partum asphyxia; newborn's phototherapy; Down's syndrome
• Nephrology and urology	Chronic renal failure/dialysis; kidney transplantation
• Neurology and psychiatry	Alzheimer' disease; amyotrophic lateral sclerosis
• Nutrition and metabolism	Dietary supplementation assessment; diabetes; obesity; dyslipidemia
• Oncology	Radio and chemotherapy effects; antioxidant therapy efficacy
• Ophtalmology	Ageing-related maculopathy; cataract
• Otolaryngology	Ménière's sindrome
• Rheumatology	Rheumatoid arthritis
• Sport medicine	Cycling; football; swimming; golf; other sports

d-ROMs test

- The d-ROMs test measures the haematic concentration of ROM ("Reactive Oxygen Metabolites," Free Radicals), an excellent indicator of stress, and is ***PRECISE, RELIABLE, AND REPEATABLE***.
- The Italian CNR (National Research Center) has confirmed that the results of a d-ROMs test, and the results of an ESR test ("Electron Spin Resonance,",which is the gold standard) are, in fact, interchangeable.
- Test results are expressed in U CARR, the measuring unit of Free Radicals now adopted by the international scientific community.
- A small drop of blood, taken from the fingertip, is all that is required to perform a d-ROMs test.

d-ROMs test - REFERENCE VALUES	
250-300	Normal range
301-320	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

The d-ROMs test is covered by international patents.

PAT test

- The PAT test is ***PRECISE, RELIABLE, AND REPEATABLE***, measuring both scavenger, and antioxidant, haematic concentrations.
- A small drop of blood, taken from the fingertip, is all that is required to perform a PAT test.

PAT test - REFERENCE VALUES	
> 2800	Very high value
2200-2800	Normal value
2200-2000	Border line low range
2000-1800	Slight deficiency status
< 1800	Deficiency status

Unit of measurement U.Cor.
1 U.Cor=1.4 µmol/L of ascorbic acid

The PAT test is covered by international patents.

Win Os Manager

- The interpretation of both the d-ROMs and PAT test must be performed by a medical practitioner. We recommend Win Os Manager software as an aid to the diagnosis of Oxidative Stress.
In addition, Win Os Manager:

FEATURES
Performs risk assessment.
Saves and files test results.
Calculates the date to begin a regimen of vitamins and antioxidants, where appropriate.
Highlights the date for the next Oxidative Stress check up.
Prints custom reports for both doctor and patient.

Win Os Manager, the software for the diagnosis of Oxidative Stress.

FRAS 4 Evolvo

H&D's FRAS 4 Evolvo performs a global assessment of Oxidative Stress using a

d-ROMs test to asses free radicals (hydroperoxides),

and a

PAT test to asses antioxidants, both tests recognized as standards by the international scientific community.

Carried out in real time, these tests allow a single medical provider, or a large scale health care organization, to diagnose Oxidative Stress with tremendous reliability and precision.

In addition, H&D's FRAS 4 Evolvo assesses pro and antioxidant compounds independently.

For the first time, the physician can now monitor the real efficacy of antioxidant treatment, balance and optimize therapy, and just as importantly, avoid the well documented deleterious effects of antioxidant misuse.

It is important to verify the necessity to intake antioxidants and to monitor their efficacy.

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CANDIDATES AND AIMS OF d-ROMs test

CANDIDATES	EXAMPLES	AIMS
Healthy, clinically asymptomatic subjects, without any risk factors for OS*.	All the apparently healthy peoples.	To identify and to prevent OS* and its consequences (early aging, diseases).
Healthy, clinically asymptomatic subjects, with one or more risk factors for OS*.	Subjects exposed to radiation sources and/or air pollutants, subjects with overweight or obeses, heavy drinkers, smokers, subjects which made inadequate exercise, subjects which follow an unbalanced diet, etc.	To identify and to prevent OS* and its consequences.
Subjects with OS*-related diseases.	Patients with one or more of following diseases: Alzheimer's disease, Parkinson's disease, stroke, infarction, blood hypertension, peripheral vascular diseases, chronic obstructive pulmonary diseases, celiac disease, Crohn's disease, pancreatitis, hepatitis, AIDS, rheumatoid arthritis, chronic renal failure, mielodysplastic syndromes, diabetes, dislipidaemias, Down's syndrome, some cancers, etc.	To monitor OS* and to prevent its consequences. To monitor efficacy of the specific therapy on current disease. To monitor efficacy of the specific therapy, eventually combined with integrative antioxidant therapy, on oxidative stress which is associated with the current disease.
Subjects which undergo some treatments at risk for OS* generation.	Patients which undergo pharmacotherapy (chemotherapeuticals, hormone replacement therapy, pill, etc.), hemodialysis, organ transplantation, surgical bypass, etc.	To identify and to prevent OS* and its consequences. To monitor efficacy of eventual measures carried out in order to prevent tissue oxidative damage.

*OS: oxidative stress

FRAS 4 Evolvo - Free Radical Analytical System

- *EASY TO USE*
- *SELF-GUIDED DISPLAY INSTRUCTIONS*
- *MINIMUM TRAINING REQUIREMENTS FOR OPERATOR*
- *RESULTS WITHIN FEW MINUTES*
- *PRECISE*
- *SAFE AND CONVENIENT*

1 WHO IS THE H&D'S FRAS 4 Evolvo AVAILABLE TO?

The H&D's FRAS 4 Evolvo is available to both doctors, and health care organizations.

2 WHAT IS IT DESIGNED TO DO?

The H&D's FRAS 4 Evolvo performs a global evaluation of oxidative stress by performing and assessing both the d-ROMs, and PAT tests.

3 HOW DIFICULT IS IT TO USE?

The H&D's FRAS 4 Evolvo, with its dedicated photometer, and built in centrifuge, enables the operator to carry out d-ROMs and PAT tests in a simple, step by step manner, guided by clear prompts on the operating display. The built in printer is capable of printing a "ticket" with patient's name, doctor's name and address, results, and date of testing. Software updates, and additional tests, when available, are downloaded through a USB port.

Figure 1. COEFFICIENT OF VARIATION

Plotted data from duplicate d-ROMs test measurements on 12 fasting individuals (first series ■ second series ◆)
All experiments were performed with FRAS.

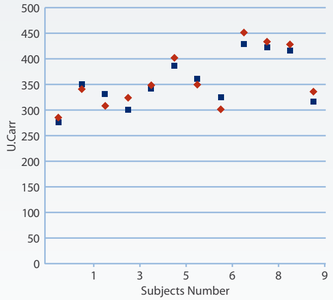
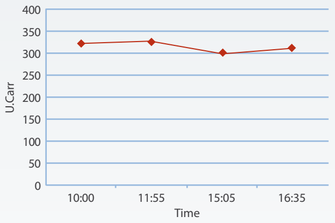


Figure 2. MEAN VALUE DURING ONE DAY

Plotted data from d-ROMs test measurements (mean values) in the same individual during one day.
All experiments were performed with FRAS.



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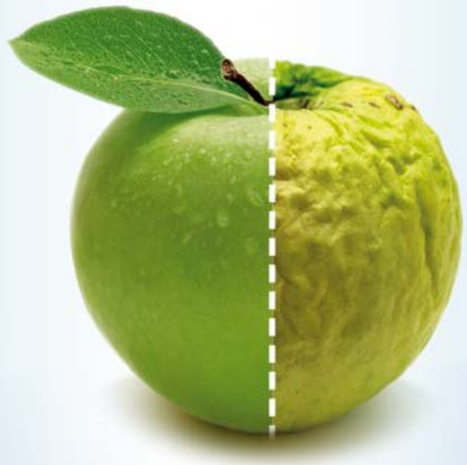

Fras 4 Evolvo

for the Global Assessment of Oxidative Stress

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