FRAS 5
The new frontier for the evaluation of oxidative stress

The Italian CNR (National Research,"Reactive Oxygen Metabolites, " Free Radicals) and it is precise, reliable, and repeatable. It measures both the scavenger and antioxidant haematic concentration of ROMs (patended) is the gold standard) are, in fact, the ESR test ("Electron Spin Resonance", Free Radicals and the only one used by the international scientific community .

The unit of measurement of Free Radicals and the only one used by the international scientific community .

1 U.Carr = 0.08 mg H2O2 /dl

You only need a small drop of blood ✔

Test results are expressed in U CARR, ✔

The Italian CNR (National Research ✔

from the fingertip, to perform a surgical bypass, etc. hemodialysis, organ transplantation, replacement therapy, pill, etc.),(chemotherapeuticals, hormone

Patients which undergo pharmacotherapy

Down's syndrome, some cancers, etc. syndromes, diabetes, dislipidaemias, chronic renal failure, mielodysplastic hepatitis, AIDS, rheumatoid arthritis, celiac disease, Crohn's disease, pancreatitis, chronic obstructive pulmonary diseases, disease, stroke, infarction, blood
diseases: Alzheimer's disease, Parkinson's

Patients with one or more of following unbalanced diet, etc. smokers, subjects which made inadequate overweight or obeses, heavy drinkers, and/or air pollutants, subjects with Subjects exposed to radiation sources

• CONVENIENT • SELF-INSTRUCTING • BRAND NEW • EASY TO USE • PRECISE • RESULTS IN FEW MINUTES TO TOUCH SCREEN DISPLAY • SCIENTIFIC VALIDATION OF FRAS 5 – supported by over 700 scientific references

Targets and goals of d-ROMs fast test and the PAT test in a simple, step by step touch screen display technology.

FRAS 5 performs a global evaluation of oxidative stress by means of the d-ROMs fast test and the PAT tests. The latest system by of H & D is available to physicians, health professionals and private laboratories.

The built-in printer provides a "ticket" with the results software updates and additional

The new frontier for the evaluation of oxidative stress.

To monitor efficacy of eventual measures To identify and to prevent OS* and its consequences.

To monitor efficacy of the specific therapy To identify and to prevent OS* and its consequences (early aging, diseases).

To identify and to prevent OS* and its consequences.

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Patients with one or more of following unbalanced diet, etc. smokers, subjects which made inadequate overweight or obeses, heavy drinkers, and/or air pollutants, subjects with Subjects exposed to radiation sources

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To identify and to prevent OS* and its consequences.

To identify and to prevent OS* and its consequences.
Know the dangers of OXIDATIVE STRESS!

The body maintains a delicate balance between free radicals working to oxidize toxic compounds, and the antioxidant defence system.

When this balance is upset, we enter in “Oxidative Stress” which causes the appearance of cellular lesions. If unchecked, Oxidative Stress can lead to accelerated aging, and to a greatly increased risk of disease.

Intervention at the point of crisis (disease) is obviously not an efficient strategy.

The earliest possible diagnosis of Oxidative Stress, at the onset of cellular damage, is now a reality with H&D’s FRAS 5.

FRAS 5 enters the medical practice from vanguard scientific research

FRAS 5 is the most advanced system for measuring oxidative stress. FRAS 5 uses plasma or serum instead of whole blood, and therefore, it is not influenced by the hematocrit that causes altered and thus inaccurate values. You need only one blood withdrawal to perform the two tests d-ROMs fast and PAT.

Reading times are the shortest: two and half minutes for d-ROMs fast test and 1 minute for PAT test. PAT is the most recent evolution in the test for the evaluation of antioxidants: it is the only test that eliminates the interferences of phosphates and therefore it is both the most specific and the fastest. The SAT test allows the evaluation of the antioxidant activity of saliva helping the prevention of problems and diseases in the oral cavity.

Thanks to these real-time tests, it is possible to establish an accurate and reliable diagnosis of oxidative stress. By these assessment only, you can optimize specific antioxidant therapies and monitor their effectiveness.
**d-ROMs fast test** (patented) is the evolution of the well-known d-ROMs test that increases the speed of execution only. In fact, the execution time is halved and changes from 5 minutes to 2 minutes and 30 seconds.

- **d-ROMs fast test** measures the haematic concentration of ROM ("Reactive Oxygen Metabolites," Free Radicals) and it is precise, reliable, and repeatable.
- The Italian CNR (National Research Center) has confirmed that the results of the **d-ROMs test**, and the results of the ESR test ("Electron Spin Resonance", the gold standard) are, in fact, interchangeable.
- Test results are expressed in U CARR, the unit of measurement of Free Radicals and the only one used by the international scientific community.
- You only need a small drop of blood from the fingertip, to perform a **d-ROMs fast test**.

**PAT test** (patented) is precise, reliable, and repeatable. It measures both the scavenger and antioxidant haematic concentrations in only 1 minute.

- **PAT test** is able to detect and to quantify in a specific manner the scavenger and antioxidant activities in a living organism.
- You only need a small drop of blood from the fingertip to perform a **PAT test**.

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**d-ROMs fast test - REFERENCE VALUES**

<table>
<thead>
<tr>
<th>Level</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>250-300</td>
<td>Normal value</td>
<td></td>
</tr>
<tr>
<td>301-320</td>
<td>Border line</td>
<td></td>
</tr>
<tr>
<td>321-340</td>
<td>Low level of oxidative stress</td>
<td></td>
</tr>
<tr>
<td>341-400</td>
<td>Middle level of oxidative stress</td>
<td></td>
</tr>
<tr>
<td>401-500</td>
<td>High level of oxidative stress</td>
<td></td>
</tr>
<tr>
<td>&gt; 500</td>
<td>Very high level of oxidative stress</td>
<td></td>
</tr>
</tbody>
</table>

Unit of measurement: U. Carr

1 U.Carr = 0.08 mg H₂O₂/dl

**PAT test - REFERENCE VALUES**

<table>
<thead>
<tr>
<th>Level</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 2800</td>
<td>Very high level of antioxidants</td>
<td></td>
</tr>
<tr>
<td>2200-2800</td>
<td>Normal value</td>
<td></td>
</tr>
<tr>
<td>2200-2000</td>
<td>Border line</td>
<td></td>
</tr>
<tr>
<td>2000-1800</td>
<td>Slight shortage of antioxidants</td>
<td></td>
</tr>
<tr>
<td>&lt; 1800</td>
<td>Shortage of antioxidants</td>
<td></td>
</tr>
</tbody>
</table>

Unit of measurement: U. Carr

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**EXAMPIES**

- **GOALS**

  - To monitor efficacy of eventual measures of oxidative stress in order to prevent tissue consequences.
  - To identify and to prevent OS* and its consequences.
  - To monitor OS* and to prevent its consequences.
  - To identify and to prevent OS* and its consequences (early aging, diseases).
  - To monitor efficacy of the specific therapy eventually combined with integrative therapy.
  - To identify and to prevent OS* and its consequences.

- **TARGETS**

  - **PATIENTS**

    - Patients with OS*-related diseases.
    - Patients with one or more of following diseases: Alzheimer’s disease, Parkinson’s disease, stroke, infarction, blood diseases: Down’s syndrome, some cancers, etc.
    - Patients which undergo pharmacotherapy (chemotherapeuticals, hormone replacement therapy, pill, etc.), surgery, organ transplantation, etc.
    - Subjects which follow an unbalanced diet, exercise, subjects which made inadequate physical exercise, subjects which made inadequate smoking, subjects which made inadequate eating habits, overweight or obesity, heavy drinkers, and/or air pollutants, subjects with Down’s syndrome, chronic renal failure, mielodysplastic syndromes, diabetes, dislipidaemias, hepatitis, AIDS, rheumatoid arthritis, celiac disease, Crohn’s disease, pancreatitis, chronic obstructive pulmonary diseases, asthma, etc.
    - Subjects exposed to radiation sources (Starkeman, nuclear tests, space flights).
    - Subjects who perform physical activities, patients with heart disease, patients with high blood pressure, patients with high cholesterol, patients with diabetes, patients with cancer, etc.
    - Patients who underwent some treatments (surgical bypass, etc.).
    - Healthy, clinically asymptomatic subjects, without any risk factors for OS*.
    - Healthy, clinically asymptomatic subjects, without any risk factors for OS*, without smoking, without drinking alcohol, without performing physical activities, without performing sport, without any risk factors for OS*.
    - All the apparently healthy peoples and athletes.
    - Primary and secondary school students.
    - Subjects who performed some treatments, etc., patients who underwent some treatments, etc., patients who underwent some treatments, etc.
    - Subjects exposed to radiation sources (Starkeman, nuclear tests, space flights).
    - Subjects who perform physical activities, patients with heart disease, patients with high blood pressure, patients with high cholesterol, patients with diabetes, patients with cancer, etc.
    - Patients who underwent some treatments (surgical bypass, etc.).

- **TARGET AUDIENCE:**

  - Physicians, medical staff, laboratories.
  - Patients affected by OS- and OS*-related diseases.
  - Subjects who are at risk for OS*.
  - Subjects who are at risk for OS*.
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**SCIENTIFIC VALIDATION OF FRAS 5** – supported by over 700 scientific references.

- **SELF-INSTRUCTING**

- **EASY TO USE**

- **RESULTS IN FEW MINUTES TO TOUCH SCREEN DISPLAY**

- **CONVENIENT**

- **PRECISE**

- **REVOLUTIONARITY**

- **TECHNOLOGY**

- **REMOTE CONSUMER APP**

- **TARGETS and goals of d-ROMs fast test**

  - Surgical bypass, etc.
  - Hemodialysis, organ transplantation, replacement therapy, pill, etc.
  - Patients which undergo pharmacotherapy (chemotherapeuticals, hormone replacement therapy, pill, etc.), surgery, organ transplantation, etc.
  - Subjects which follow an unbalanced diet, exercise, subjects which made inadequate smoking, subjects which made inadequate eating habits, overweight or obesity, heavy drinkers, and/or air pollutants, subjects with Down’s syndrome, chronic renal failure, mielodysplastic syndromes, diabetes, dislipidaemias, hepatitis, AIDS, rheumatoid arthritis, celiac disease, Crohn’s disease, pancreatitis, chronic obstructive pulmonary diseases, asthma, etc.
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  - Healthy, clinically asymptomatic subjects, without any risk factors for OS*.
  - Healthy, clinically asymptomatic subjects, without smoking, without drinking alcohol, without performing physical activities, without performing sport, without any risk factors for OS*.
  - All the apparently healthy peoples and athletes.
  - Primary and secondary school students.
  - Subjects who performed some treatments, etc., patients who underwent some treatments, etc., patients who underwent some treatments, etc.
  - Subjects exposed to radiation sources (Starkeman, nuclear tests, space flights).
  - Subjects who perform physical activities, patients with heart disease, patients with high blood pressure, patients with high cholesterol, patients with diabetes, patients with cancer, etc.
  - Patients who underwent some treatments (surgical bypass, etc.).

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**FRAS 5 – Free Radical Analytical System**

- **HOW DIFFICULT IS IT TO USE?**

- **TARGETS**

- **GOAL**

  - TO MONITOR EFFICACY OF THE SPECIFIC THERAPY EVENTUALLY COMBINED WITH INTEGRATIVE THERAPY.
  - TO IDENTIFY AND TO PREVENT OS* AND ITS CONSEQUENCES.
  - TO MONITOR EFFICACY OF EVENTUAL MEASURES OF OXIDATIVE DAMAGE.
  - TO IDENTIFY AND TO PREVENT OS* AND ITS CONSEQUENCES.
  - TO IDENTIFY AND TO PREVENT OS* AND ITS CONSEQUENCES.
  - TO IDENTIFY AND TO PREVENT OS* AND ITS CONSEQUENCES.

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and visit:
Lesions. If unchecked, Oxidative Stress can lead to accelerated aging, and to a greatly increased risk of the antioxidant defence system. The body maintains a delicate balance between free radicals working to oxidize toxic compounds, and scientific research FRAS 5 enters the medical practice from vanguard efficacy. It is important to monitor their activity of saliva helping the prevention of problems and diseases in the and the fastest. The SAT test allows the evaluation of the antioxidant interferences of phosphates and therefore it is both the most specific for the evaluation of antioxidants: it is the only test that eliminates the PAT. Reading times are the shortest: two and half minutes for d-ROMs fast and PAT.

The OSI index (Oxidative Stress Index) sums up in a single value the information obtained from the d-ROMs test and the PAT test and makes easier and more immediate the interpretation of the results. In order to evaluate the validity of OSI, we created a table of 366 OSI values derived by the same number of combinations of d-ROMs and PAT values that is summarized by the table on the left. The OSI index is a perfect starting point for the evaluation of the oxidative stress by the doctor and for an easier understanding from the patient. It also allows for a fast and certain evaluation of the improvement or worsening by therapies and sickness.

The OBRI index (Oxidative Balance Risk Index - patented) determines the status of the oxidative balance according to the cholesterol levels and is an interesting predictive index for the cardiovascular risk (Belcaro, Cornelli, Finco). The carotid intima-media thickness modification following atorvastatin is bound to the modification of the oxidative stress, Journal of cardiovascular pharmacology and therapeutics, 2014). OBRI evaluates in a reliable, reproducible and repeatable way the cardiovascular risk connected to an altered oxidative balance. OBRI is based on the determination of total cholesterol (CH), of Oxidative Index (OI) and of Protective Index (PI):

\[
OBRI = \frac{OI}{PI} \times 0,0455 \times CH
\]

The OBRI index accounts for OI and PI indexes and for the total cholesterol and represents an important indication of the cardiovascular risk.

### OSI Test - Reference Values

<table>
<thead>
<tr>
<th>Value</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 40</td>
<td>Normal</td>
</tr>
<tr>
<td>41 - 65</td>
<td>Borderline: alert status, first symptoms of a possible failure</td>
</tr>
<tr>
<td>66 - 120</td>
<td>High: critical situation, failure in progress</td>
</tr>
<tr>
<td>&gt; 121</td>
<td>Very High: very critical situation</td>
</tr>
</tbody>
</table>

### OBRI Test - Reference Values

<table>
<thead>
<tr>
<th>Value</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,8 - 1,2</td>
<td>Normal</td>
</tr>
<tr>
<td>1,3 - 1,7</td>
<td>High</td>
</tr>
<tr>
<td>1,8 - 2,2</td>
<td>Very High</td>
</tr>
<tr>
<td>&gt; 2,2</td>
<td>Extremely High</td>
</tr>
</tbody>
</table>
Lesions. If unchecked, Oxidative Stress can lead to accelerated aging, and to a greatly increased risk of disease. When this balance is upset, we enter in “Oxidative Stress” which causes the appearance of cellular and organ damage. The body maintains a delicate balance between free radicals working to oxidize toxic compounds, and the antioxidant defence system.

Know the dangers of OXIDATIVE STRESS!

FRAS 5 enters the medical practice from vanguard science.

It is important to monitor their antioxidant therapies and monitor their effectiveness.

Thanks to these real-time tests, it is possible to establish an accurate and reliable diagnosis of oxidative stress. By these assessment only, you can optimize your health.

The interpretation of d-ROMs fast test and PAT test must be performed by a medical practitioner.

We recommend OB Manager software as an aid to the diagnosis of Oxidative Stress.

**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.

**SAT test - REFERENCE VALUES**

<table>
<thead>
<tr>
<th>Vitamin C of antioxidant</th>
<th>μMol/L</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>&lt; 1000</strong></td>
<td>Shortage of antioxidants</td>
</tr>
<tr>
<td><strong>1000 - 1500</strong></td>
<td>Optimal values of antioxidants</td>
</tr>
<tr>
<td><strong>1500 - 2000</strong></td>
<td>Normal values of antioxidants</td>
</tr>
<tr>
<td><strong>2000 - 2500</strong></td>
<td>Border line</td>
</tr>
<tr>
<td><strong>&gt; 2500</strong></td>
<td>Possible inflammatory processes</td>
</tr>
</tbody>
</table>

Unit of measurement: mEq/L of Vitamin C of antioxidant - μMol/L

**OB Manager**

the software for the diagnosis of Oxidative Stress.

**SCIENTIFIC VALIDATION OF FRAS 5 – supported by over 700 scientific references**

Areas of interest and some applications of FRAS 5 in human medicine, according to the currently available scientific literature

- Antiaging and aesthetic medicine: Skin ageing
- Alternative medicine: Ozone-therapy; effects of 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
- Gynecology and Obstetrics: Taking the pill; menopause
- 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's disease; amyotrophic lateral sclerosis
- Nutrition and metabolism: Dietary supplementation assessment; diabetes; obesity; dyslipidemia
- Oncology: Radio and chemotherapy effects; antioxidant therapy efficacy
- Ophthalmology: Ageing-related maculopathy; cataract
- Otolaryngology: Ménière's syndrome
- Rheumatology: Rheumatoid arthritis
- Sports medicine: Cycling; football; swimming; golf; other sports
- Stomatology: Caries prevention; periodontal diseases control

It is covered by international patents.

SAT test is an innovative test for the measurement of antioxidants in saliva.

It is fast (reading time: 1 minute), precise and repeatable.

It is covered by international patents.

Knowing the antioxidant capacity of saliva is therefore useful in the prevention of caries and periodontitis.
FRAS 5 - Free Radical Analytical System

**TARGET AUDIENCE:**
The latest system by of H & D is available to physicians, health professionals and private laboratories.

**GOAL**
FRAS 5 performs a global evaluation of oxidative stress by means of the d-ROMs fast test and the PAT tests.

**HOW DIFFICULT IS IT TO USE?**
FRAS 5, is a dedicated photometer, with a built-in centrifuge, it allows the operator to perform the d-ROMs fast test and the PAT test in a simple, step by step procedure, guided by clear prompts on the display. The built-in printer provides a “ticket” with the results and the date of testing. Software updates and additional tests, when available, are downloaded through a USB port.

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**SCIENTIFIC VALIDATION OF FRAS 5 – supported by over 700 scientific references**

<table>
<thead>
<tr>
<th>TARGETS</th>
<th>EXAMPLES</th>
<th>GOALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy, clinically asymptomatic subjects, without any risk factors for OS*.</td>
<td>All the apparently healthy peoples and amateurs athletes.</td>
<td>To identify and to prevent OS* and its consequences (early aging, diseases).</td>
</tr>
<tr>
<td>Healthy, clinically asymptomatic subjects, with one or more risk factors for OS*.</td>
<td>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.</td>
<td>To identify and to prevent OS* and its consequences.</td>
</tr>
<tr>
<td>Subjects with OS*-related diseases.</td>
<td>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.</td>
<td>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.</td>
</tr>
<tr>
<td>Subjects which undergo some treatments at risk for OS* generation.</td>
<td>Patients which undergo pharmacotherapy (chemotherapeutics, hormone replacement therapy, pill, etc.), hemodialysis, organ transplantation, surgical bypass, etc.</td>
<td>To identify and to prevent OS* and its consequences. To monitor efficacy of eventual measures carried out in order to prevent tissue oxidative damage.</td>
</tr>
</tbody>
</table>

*OS: oxidative stress

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