The **OSI index** (Oxidative Stress Index) was developed to integrate in a single value the information provided by the d-ROMs and PAT tests, in order to simplify the evaluation of the oxidative stress status in plasma samples.

The **OSI index** is based on **specific standardizations** of the results of the d-ROMs and PAT tests, in order to compare them, despite the different measuring units (U Carr and U Cor) and the different value ranges (250-300 d-ROMs test and 2200-2800 for PAT test). Certain arithmetical transformations were used to determine the final OSI values so that an easy and convenient interpretation of the results is possible. The value range for the OSI index is from 0 to 200.

The OSI index value shows the departure from the normal state of oxidative balance (zero value), that is the perfect equilibrium between the pro-oxidant and anti-oxidant components of the oxidative balance. Low values of OSI index reflect an oxidation state closer to oxidative balance. OSI index increases proportionally with any level of oxidative imbalance; its increase can be caused by either the increase of pro-oxidant species (highlighted by d-ROMs test results) or the decrease of the antioxidant protection (highlighted by PAT test results). The higher the OSI index, the bigger is the deviation from normality.

The validation of the OSI index was obtained by using a table containing **336 OSI values**, compiled from as many PAT test and d-ROMs test values (Fig.2).

Based on the values obtained and to simplify the interpretation of the results, the OSI scale was developed (Fig.1).

The OSI index **does not substitute** the d-ROMs and PAT test results, but it **complements and enhances** their value.

<table>
<thead>
<tr>
<th>normality</th>
<th>&lt; 40</th>
<th>normality</th>
</tr>
</thead>
<tbody>
<tr>
<td>borderline</td>
<td>41 - 65</td>
<td>borderline</td>
</tr>
<tr>
<td>high</td>
<td>66 - 120</td>
<td>alert</td>
</tr>
<tr>
<td>very high</td>
<td>&gt; 121</td>
<td>critical situation: evident unbalance</td>
</tr>
</tbody>
</table>

**Fig.1 – OSI scale**
Fig. 2 – OSI values table

**Normal OSI values** correspond either to normal values for both d-ROMs and PAT or to only one of the tests being slightly offset from the normality range.

**Borderline OSI values** correspond to bigger deviations of both d-ROMs and PAT values from normal, which typically indicates the onset of various health conditions. They are the result of increase of the oxidant species or a decrease of the antioxidant reserve (signs of a possible inflammation process initiation) or even an anomalous increase of the antioxidant reserve that might reflect a state of cellular destruction and consequent release in circulation of intracellular antioxidant agents. All these situations need to be monitored.

**High and very high OSI values** correspond to large deviations from the normal values of both tests, typically with high values in both tests or a high d-ROMs plus a simultaneously low PAT; both cases are signs of a high oxidative stress. A high OSI value indicates a severe condition to evaluate in depth and with attention.

The OSI index by itself does not carry the same diagnostic value of the synoptic tables of the d-ROMs and PAT tests, but it is certainly an excellent starting point for the global evaluation of oxidative stress of the healthcare professional and enables a much easier understanding of the process by the patient. Furthermore, it allows a fast and reliable monitoring of the evolution of a various health conditions.

FRAS5, d-ROMs fast and PAT test are distributed in USA and Mexico by Innovatics Laboratories, Inc.
Toll-free: (877) 442-6910 · www.innovaticslab.com · info@innovaticslabs.com