Table 1

Approximate frequencies of occurrence of endogenous DNA damage in mammalian cells.

<table>
<thead>
<tr>
<th>Damage</th>
<th>Events per cell per day</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depurination</td>
<td>10,000</td>
<td>(Lindahl and Nyberg 1972)</td>
</tr>
<tr>
<td>Depyrimidination</td>
<td>600</td>
<td>(Lindahl and Karlstrom 1973)</td>
</tr>
<tr>
<td>Deamination</td>
<td>100-300</td>
<td>(Lindahl and Nyberg 1974)</td>
</tr>
<tr>
<td>Single-strand breaks</td>
<td>10,000</td>
<td>(Saul 1985)</td>
</tr>
<tr>
<td>(Including all types of base damage viz. oxidative damage, adduct formation with reducing sugars, methylation, cross-links and so forth)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Double-strand break</td>
<td>9</td>
<td>(Bernstein and Bernstein 1991)</td>
</tr>
<tr>
<td>Interstand cross link</td>
<td>8</td>
<td>(Bernstein and Bernstein 1991)</td>
</tr>
<tr>
<td>DNA-protein cross link</td>
<td>unknown</td>
<td>(Bernstein and Bernstein 1991)</td>
</tr>
<tr>
<td>Name</td>
<td>Sequence</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>----------</td>
<td></td>
</tr>
<tr>
<td>UG</td>
<td>5’gccattgUgcatacgatcgcc3’&lt;br&gt;3’cggtaacGgatggctagcg5’</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>5’ccgcgatcggtagFCaatggc3’&lt;br&gt;3’gcgcctagcctacgCttaccg5’</td>
<td></td>
</tr>
<tr>
<td>O</td>
<td>5’gaactagtGOatccccccgggtg3’&lt;br&gt;3’cttgataaacCtagggggccgacg5’</td>
<td></td>
</tr>
</tbody>
</table>

U: deoxy-uracil; F: Tetrahydrofuran abasic site analog; O: 8-oxo-guanine
Table 3
Detection of uracil sites in isolated neurons and astrocytes prepared from Young (7 days), Adult (6 months) and Old (≥2 years) rat cerebral cortex by comet assay following with or without treatment with uracil-DNA glycosylase (Udg).

<table>
<thead>
<tr>
<th>Sample</th>
<th>Buffer Tail moment (mean±SD)</th>
<th>Udg Tail moment (mean±SD)</th>
<th>Net amount of uracil sensitive sites.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young Neurons</td>
<td>14.96 ± 12.06</td>
<td>22.77 ± 15.22</td>
<td>7.81</td>
</tr>
<tr>
<td>Adult Neurons</td>
<td>115.71 ± 30.79</td>
<td>141.78 ± 65.29 *</td>
<td>26.07</td>
</tr>
<tr>
<td>Old Neurons</td>
<td>134.70 ± 41.83</td>
<td>185.34 ± 74.63 *</td>
<td>50.64</td>
</tr>
<tr>
<td>Young Astrocytes</td>
<td>18.80 ± 15.77</td>
<td>24.83 ± 16.84</td>
<td>6.03</td>
</tr>
<tr>
<td>Adult Astrocytes</td>
<td>121.92 ± 35.91</td>
<td>141.72 ± 57.39 *</td>
<td>19.8</td>
</tr>
<tr>
<td>Old Astrocytes</td>
<td>135.72 ± 39.22</td>
<td>175.44 ± 61.71 *</td>
<td>39.72</td>
</tr>
</tbody>
</table>

Values are expressed in mean ± (SD).
* These values are significantly different (P<0.05 for adult and old) from the corresponding value at ‘young’ (ANOVA, Holm-Sidak method).
Detection of 8-oxoG sites in isolated neurons and astrocytes prepared from Young (7 days), Adult (6 months) and Old (≥2 years) rat cerebral cortex by comet assay following with or without treatment with 8-oxoguanine DNA glycosylase (Ogg1).

<table>
<thead>
<tr>
<th>Sample</th>
<th>Buffer</th>
<th>Ogg1</th>
<th>Net amount of 8-oxoG sites</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tail moment (mean±SD)</td>
<td>Tail moment (mean±SD)</td>
<td></td>
</tr>
<tr>
<td>Young Neurons</td>
<td>14.46 ± 10.09</td>
<td>22.75 ± 20.99</td>
<td>8.29</td>
</tr>
<tr>
<td>Adult Neurons</td>
<td>94.76 ± 33.10</td>
<td>138.18 ± 78.09*</td>
<td>43.42</td>
</tr>
<tr>
<td>Old Neurons</td>
<td>114.01 ± 21.24</td>
<td>175.64 ± 54.96*</td>
<td>61.63</td>
</tr>
<tr>
<td>Young Astrocytes</td>
<td>20.04 ± 14.89</td>
<td>30.74 ± 24.56</td>
<td>10.7</td>
</tr>
<tr>
<td>Adult Astrocytes</td>
<td>100.42 ± 36.95</td>
<td>135.05 ± 43.31*</td>
<td>34.63</td>
</tr>
<tr>
<td>Old Astrocytes</td>
<td>116.59 ± 23.10</td>
<td>169.49 ± 54.59*</td>
<td>52.9</td>
</tr>
</tbody>
</table>

Values are expressed in mean ± standard deviation (SD).

*These values are significantly different (P<0.05 for adult and old) from the corresponding value at ‘young’ (ANOVA, Holm-Sidak method).
Table 5

DNA polymerase β activity in young, adult and old control and calorie restricted rat neuronal extracts with ‘activated’ calf thymus DNA as template primer.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Specific activity of Pol β (picomole)</th>
<th>% increase in specific activity in calorie restricted compared to control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young Neurons</td>
<td>7859 ±1143</td>
<td></td>
</tr>
<tr>
<td>Adult Neurons</td>
<td>780 ± 88</td>
<td></td>
</tr>
<tr>
<td>Old Neurons</td>
<td>229 ± 86</td>
<td>-</td>
</tr>
<tr>
<td>Old calorie restricted Neurons</td>
<td>369 ± 61*</td>
<td>61.18</td>
</tr>
</tbody>
</table>

Values are mean ± S.D. and expressed as picomole of the radioactive deoxynucleotide incorporated into the acid insoluble fraction in 1 hour/milligram protein. Three independent experiments were performed in the case of young and adult neurons and five independent experiments were done in case of old control and calorie restricted old neurons respectively.* indicate values are significantly different from old control neuron, P<0.01 (Student’ t-test).