Menopause is a natural step in the process of ageing and oxidative stress has been proposed as important causative agents of ageing. The main objective of the present study is to know the status of antioxidant enzymes (SOD) in pre and postmenopausal women and to find their correlation with lipid profile.

**Inclusion Criteria**
- Post-menopausal age group (45- 60 years)
- Women taking oral contraceptives, antioxidants or any other drug were also excluded from the present study.
- Written consent was taken from each case, and all ethical measures were followed prior to the study.

**Exclusion Criteria**
- Post-menopausal women with minimum two year amenorrhea were selected.
- Pre-menopausal age group (30- 45 years)

**Material and Method**
200 cases diagnosed with menopause from Gynaecology OPD of Teerthakker Mahaveer Medical College and Research Center, Moradabad, U.P was chosen for the present study.

**Statistical Analysis**
Done in Microsoft Excel; Firstly data were coded in Microsoft sheet and SOD activity measured by ELISA and SPECTROPHOTOMETER. We measured serum lipid profile by standard methods on an automated chemistry analyzer (VITROS ECi/ECIQ) and SOD activity fasting were estimated. All reagents, calibrator, controls and samples were brought to room temperature before starting the test run. We measured serum lipid profile by standard methods on an automated chemistry analyzer (VITROS ECi/ECIQ) and SOD activity measured by ELISA and SPECTROPHOTOMETER.

**Table 1: Statistical Findings**

<table>
<thead>
<tr>
<th>Type of Subject</th>
<th>HDL-C</th>
<th>LDL-C</th>
<th>VLDL-C</th>
<th>Total-cholesterol</th>
<th>TG-C</th>
<th>SOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Menopause (n=100)</td>
<td>54.05±14.03</td>
<td>93.30±37.77</td>
<td>29.40±24.84</td>
<td>171.95±40.33</td>
<td>120.90±36.26</td>
<td>4.80±1.73</td>
</tr>
<tr>
<td>Post-Menopause (n=100)</td>
<td>51.5±12.20</td>
<td>106.6±40.35</td>
<td>31.6±13.28</td>
<td>197±33.74</td>
<td>157.65±66.53</td>
<td>1.35±.58</td>
</tr>
</tbody>
</table>

**KEYWORDS**
- Super Oxide Dismutase, Oxidative Stress, Hormonal imbalance, Pre and Post Menopausal women, Lipid Profile, Antioxidant
4. Findings

Table 2: Mean levels of lipid profile factors in pre-menopausal women

<table>
<thead>
<tr>
<th>Mean age of the sample</th>
<th>Mean HDL</th>
<th>Mean LDL-C</th>
<th>Mean VLDL-C</th>
<th>Mean T.CHL</th>
<th>Mean T.G-C</th>
<th>Mean SOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>38 yrs</td>
<td>54.05</td>
<td>93.30</td>
<td>29.40</td>
<td>171.95</td>
<td>120.90</td>
<td>4.82</td>
</tr>
</tbody>
</table>

Observation:
- The HDL-C is found maximum in the women of age group 36 to 40 years and minimum in the women of 35 years.
- The LDL-C is maximum in the women of age 33 years and minimum in the women of 43 years.
- Regarding the VLDL-C were found a very different pattern i.e. maximum in the age 40 years and minimum in the age 43 years.
- The total cholesterol is found maximum in the women of age 70 years and minimum in women of 43 years.
- The total glucose is found maximum in the women of age 36 years and minimum in the woman of 43 years.
- The SOD level is seen highest in the women of 33 years and lowest in the woman of 43 years in age.

Table 3: Mean Levels of Post-Menopausal Women

<table>
<thead>
<tr>
<th>Mean Age</th>
<th>Mean HDL</th>
<th>Mean LDL-C</th>
<th>Mean VLDL-C</th>
<th>Mean T.CHL</th>
<th>Mean T.G-C</th>
<th>Mean SOD ACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>61.6</td>
<td>51.42</td>
<td>103.66</td>
<td>31.18</td>
<td>195.85</td>
<td>155.56</td>
<td>1.04</td>
</tr>
</tbody>
</table>

5. Results

The Mean value of SOD is more in Pre-menopausal women (4.80 ± 1.73) as compared to Post-menopausal women (1.35 ± .58). These variation were significant (p <0.05). Findings of this study corroborate the hypothesis that gradual loss of ovarian function is associated with a concomitant decrease in antioxidant status.

6. Conclusion

The study reveals that, there is enhanced oxidative stress and decreased antioxidant defence mechanism in post-menopausal females compared to pre-menopausal women which can play an important role in the pathogenesis of the various diseases related to menopause. Therefore antioxidants in the form of micronutrients and vitamins can be given as supplements in postmenopausal women along with or as a substitute to hormone replacement therapy.

Findings of this study corroborate the premise that gradual loss of ovarian function is associated with a concomitant rise in oxidative stress as exhibited both by decreased levels of antioxidants in pre and post-menopausal women. We suggest further studies on this issue which may involve larger sample size, additional parameters, and may also look into the nutritional aspects especially in reference to non-enzymatic anti-oxidants, so that the intricate relationship between menopause and oxidative stress is understood more clearly and such knowledge may contribute in attenuation of distress caused by menopause to half of the world’s population.

References