**Original article:**

**Determination of reference limit and evaluation of precision to measure Total Antioxidant Capacity (TAC) by Ferric Reducing Antioxidant Power (FRAP) method**

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**Abstract**

**Introduction**: Total Antioxidant Capacity (TAC) is an important parameter and is a better alternative as all the antioxidants present in plasma need not to be measured separately.

**Method**: Blood was collected from 150 healthy volunteers to establish reference limit. TAC is measured by Ferric Reducing Antioxidant Power (FRAP) method, which is based on the principle that antioxidants present in the plasma reduce Fe+++ TPTZ complex to Fe++ TPTZ a blue coloured complex, the change in absorbance directly reflects the TAC of plasma. The absorbance is measured at 630nm, slightly modified from the original method, so that it can be measured in a semi-auto analyzer.

**Observation**: Mean of the study was found to be 1330.18 μMole/L with SD 253.36. Median of TAC was 1303 μMole/L. 95% reference limit for lower and upper case was 928.55 & 1802.50 μMole/L respectively. This method was found to be linear up to at least 2500 μMole/L. The overall precision of the method was quite satisfactory as intra & inter assay CV were 3.14% and 3.78% respectively. The plasma samples could be stored for at least 14 days in deep freeze without significant alteration. TAC level was estimated in plasma with high glucose concentration and was found to be significantly lower than normal (844.11+ 269.10 μmole/L).

**Conclusion**: FRAP is a simple, rapid and precise assay to measure TAC in plasma.

**Keywords**: Total Antioxidant capacity (TAC), Ferric Reducing Antioxidant Power (FRAP)