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# Biolab Medical Unit

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## Serum Antioxidant Activity

### Indications

Oxidative stress states, nutritional deficiencies.

### Patient preparation

The patient should abstain from taking antioxidant supplements (any supplements containing vitamins A, C or E) for 12 hours prior to sampling.

### Specimen requirements

5 ml of clotted blood (red / red speckled top tube). For samples from outside the United Kingdom, the serum should be separated from the red cells before dispatch.

**Price:** £41.00 (includes serum total antioxidant activity and serum nutritional antioxidant activity).

### Methodology

By decolorisation of the ABTS radical cation, using Trolox as a standard.

### Quality control

High, normal and low sera of known activity are run with each assay.

### Turn around time

The assay is done twice weekly.

### Interpretation

The radical-scavenging antioxidants in human serum represent a heterogeneous group of substances, some synthesised in the body and some derived exclusively from the diet. The reference interval for serum total antioxidant activity by this method is 1.32 – 1.58 mmol/L (Trolox equivalents). The reference interval for serum nutritional antioxidants is 450 – 800 µmol/L (Trolox equivalents). Oxidative stress, i.e. the presence of a relative excess of pro-oxidants in the extra-cellular fluid, causes a fall in these figures. Deficiencies of vitamin C (reference interval 34 – 114 µmol/L) or vitamin E (reference interval 25 – 60 µmol/L) usually only have a marginal effect on these figures and hence levels of these vitamins should be assessed individually.

### References

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2. O'Brien SF, Watts GF, Powrie JK, Shaw KM, Miller NJ. Relationship of serum lipids, lipoproteins, and plasma antioxidants with glomerular and tubular dysfunction in insulin-dependent diabetes mellitus. *Diabetes Research and Clinical Practice* 1996;32:81-90.
3. Miller NJ, Johnston JD, Collis CS, Rice-Evans CA. Serum antioxidant activity after myocardial infarction. *Annals of Clinical Biochemistry* 1997;34:85-90.
4. Rice-Evans CA, Miller NJ. The measurement of the antioxidant status of dietary constituents, low density lipoproteins and plasma. *Prostaglandins, Leukotrienes and Essential Fatty Acids* 1997;57:499-505.