

# SLEEP APNEA

## Antioxidant Status

It is well documented that sleep apnea patients have both reduced antioxidant capacity and higher levels of oxidative stress than controls. <sup>5,6,7,8</sup>

## Cysteine

Oral supplementation with cysteine, the precursor to glutathione, has therapeutic potential for sleep apnea. Snore time and duration were significantly reduced for patients treated with N-acetyl cysteine compared to untreated sleep apnea patients. <sup>1,2,3,4</sup>

## Vitamin C

Improves endothelial function (blood vessel health) in sleep apnea patients to levels seen in people without sleep apnea. <sup>9,10,11</sup>

## Vitamin E

Mitigates the oxidative stress seen in sleep apnea patients; Works synergistically with vitamin C. <sup>5,11,12</sup>

## Vitamin A

Sleep apnea patients have low retinol (vitamin A); Retinol suppresses the growth of vascular smooth muscle, a process that causes blood vessels to clog, linking low vitamin A levels to the cardiovascular complications seen in sleep apnea patients. <sup>13,14</sup>

## Vitamin D

People with sleep apnea have a high prevalence of vitamin D deficiency; The worse the apnea, the more severe the deficiency; Evidence suggests low vitamin D worsens sleep apnea's negative effect on heart disease risk. <sup>15,16,17</sup>

## Selenium

In one case report, selenium supplementation completely stopped snoring caused by non-obesity sleep apnea; Selenium's role as a potent antioxidant may reduce the oxidative stress seen in sleep apnea patients. <sup>18,19,20</sup>

## Copper

Considered a strong predictor of oxidative stress in sleep apnea patients; Copper's role as a key cofactor in the powerful antioxidant superoxide dismutase (SOD) explains this; SOD is very low in apnea patients. <sup>21,22</sup>

## Minerals

The trace minerals *zinc, copper, magnesium, manganese* and *selenium* are critical cofactors for the major antioxidant enzymes, which are important in repairing cellular damage caused by hypoxia (lack of oxygen) in sleep apnea. <sup>23,24</sup>

## Glutathione

Low levels linked to sleep apnea; This powerful antioxidant helps repair liver damage caused by sleep apnea. <sup>25,26,27</sup>