

# The Potential Impact of Essential Nutrients Vitamins C and D upon Periodontal Disease Pathogenesis and Therapeutic Outcomes

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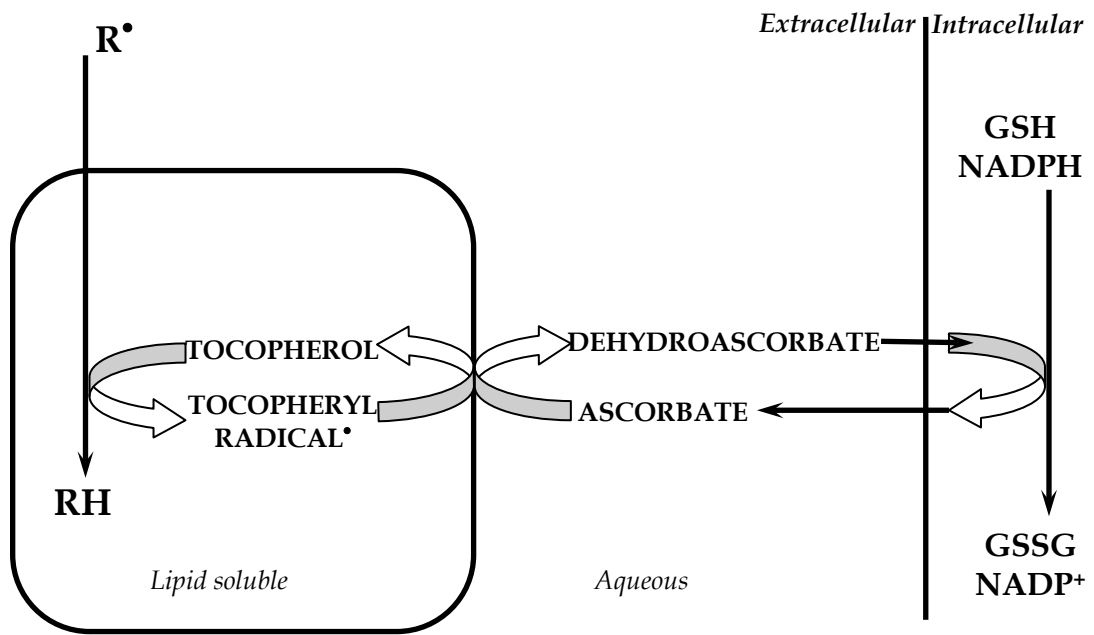
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**Figure 1 Intracellular reducing power linked to the antioxidant status of both the lipid- and water-soluble environment.**

Following vitamin E (tocopherol) oxidation to the tocopheryl radical by an attacking radical ( $R^\bullet$ ), alpha tocopherol can be regenerated by a redox reaction with ascorbic acid at the lipid-water interface. The oxidised form of ascorbate can subsequently be regenerated intracellularly by glutathione (GSH)-dependent dehydroascorbate reductase to yield oxidised glutathione (GSSG), or by nicotinamide adenine dinucleotide phosphate (NADPH)-dependent dehydroascorbate reductase to yield oxidised NADP $^+$ .



**Figure 2** Scorbutic gingivitis is reported at levels  $<10\text{mg/day}$  vitamin C intake.