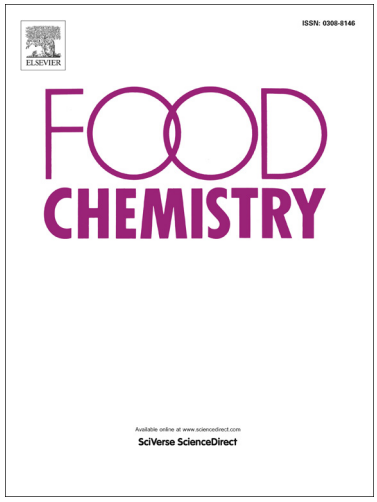

Water soluble nanocurcumin extracted from turmeric challenging the microflora from human oral cavity

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Water soluble nanocurcumin extracted from turmeric challenging the microflora from human oral cavity

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Abstract
Water soluble nanocurcumin prepared from commercial turmeric powders was compared against ethanol extracted curcumin particles. The oral microflora from five different human volunteers was collected and the efficacy of solvent extracted curcumin versus water extracted nanocurcumin was demonstrated. Nanocurcumin activity against oral microflora confirms its antimicrobial potency. Confocal laser scanning microscopic results revealed the enhanced entry of nanocurcumin particles into microbial cells. The nanosized nature of nanocurcumin appears to have led to increased cellular interaction and thereby efficient destruction of microbial cells in the mouth. In addition, solubility of nanocurcumin is also believed to be a crucial factor behind its successful antimicrobial activity. This study proves that the bioactivity of a compound is greatly influenced by its solubility in water. This work recommends the use of water soluble nanocurcumin (extracted from turmeric) as potent substitute for curcumin in dental formulations.
Keywords; nanocurcumin; oral bacteria; human volunteers; inhibition; turmeric

1. Introduction

All human systems harbor personalized sets of microflora that are essential for maintaining health and also capable of eliciting disease. The totality of these microorganisms, their genomes and ecosystems encompasses what is known as the microbiome (Parahitiyawa, 2010; Rajendiran et al, 2010; Ling et al., 2010). There are various microhabitats throughout the body that contribute to the overall microbiome (Badger et al., 2011 & Sonnenburg et al, 2011). With respect to microbial flora, the oral cavity is one of the most densely populated sites of the human body (Nobuhiro, 2005).

Specifically, studies have proven the role of oral microflora in the etiology of numerous oral and systemic diseases (Scannapieco, 1998 & Garcia et al., 2001,Zarco et al., 2011). While the microbial colonies maintain oral homeostasis, they are also crucial players in oral diseases (Flemmig and Beikler, 2011). Oral conditions, such as dental caries, periodontitis and oral malodor, begin at the interface between the microbial ecosystem and