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Titanium dioxide (TiO₂) photocatalysis technology for nonthermal inactivation of microorganisms in foods

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1 **Titanium Dioxide (TiO₂) Photocatalysis Technology for Nonthermal Inactivation**
2 **of Microorganisms in Foods**

3
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15
16 **Abstract**

17 *Background:* Microbial contamination is a serious challenge in the food industry. With the increasing
18 demand for fresh, nutritious and healthy food, novel techniques for microbial inactivation are highly
19 needed. By absorbing photoenergy, titanium dioxide (TiO₂) based photocatalyst can produce reactive
20 oxygen species (ROS) that are capable of inactivating microorganisms.

21 *Scope and approach:* This review summarizes recent research developments of TiO₂ photocatalysis
22 (TPC) for antibacterial applications in liquid, gas and solid systems in the food industry. Basic
23 principles of TPC, the mechanism of photocatalytic inactivation, and strategies for improving

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