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Citrus Essential Oils a Good Alternatives to Antibiotics in Aquaculture

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Aquaculture is the farming of aquatic organisms, including fish, molluscs, crustaceans and aquatic plants [1]. Aquaculture is a booming sector because of the always increasing demand which is partly opposed by the insurgency of infectious diseases affecting the farm animals and that are a major risk and responsible for substantial economic losses in this sector [2-5]. The unprejudiced use of antibiotics to prevent or to treat the bacterial diseases can lead to the development bacterial resistant strains that could be threat to human health [6-8]. Several measures have been taken on national and international scales to reduce or even halt the use of antibiotics in aquaculture. In this context research is being carried out on new natural products that have an antibiotic capacity such as natural essential oils [8,9] Essential oils (EOs) are aromatic oily liquids characterized by a strong odour and produced by fruits or plants. As the majority of EOs their chemical constituents give a good resistance to pathogens [10]. EOs are used in many industrial sectors such as food field up to perfumery and pharmaceuticals [11,12] studied the effects of *Citrus sinensis* against *Streptococcus iniae* [13]; showed that Citrus lemon essential oil significantly inhibited the growth of *Yersinia ruckeri*, *Aeromonas hydrophila*, *Listonella anguillarum* and *Citrobacter freundii*.

Mancuso et al. (in press) showed *V. anguillarum* and *Photobacterium damsela* subsp *piscicida* showed high sensitivity to Citrus Eos. Finally [14] highlighted the importance one of the major citrus components the limonene against spoilage microorganisms. In my opinion I think that only a mix of components give a good action against bacterial growth so other studies are necessary to better understand the inhibitory action of citrus essential oils [15].

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Conflicts of Interest

No conflicts of interest.

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