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## REVIEWER'S REPORT

Manuscript No.: IJAR-57745

**Title:** Natural Immunomodulators as Alternatives to Antimicrobials: Evidence from Zebrafish Models.

**Recommendation:**

Accept as it is .....

**Accept after minor revision...**

Accept after major revision .....

Do not accept (*Reasons below*) .....

| Rating         | Excel.    | Good | Fair | Poor |
|----------------|-----------|------|------|------|
| Originality    |           | Good |      |      |
| Techn. Quality | Excellent |      |      |      |
| Clarity        |           | Good |      |      |
| Significance   | Excellent |      |      |      |

Reviewer's ID: Dr. Sumathi

### *Detailed Reviewer's Report*

- 1. Oxidative stress is an imbalance between unstable molecules (free radicals) and protective molecules (antioxidants) in your body. When free radicals outnumber antioxidants, they damage cells and DNA, accelerating aging and contributing to chronic conditions like heart disease, diabetes, and inflammation.**
- 2. Reactive oxygen species (ROS) are chemically unstable, oxygen-containing molecules that easily react with other cellular components. While primarily known as toxic byproducts of cellular metabolism that cause tissue damage, they are also essential signaling molecules required to regulate vital biological processes.**
- 3. Natural immunomodulators are bioactive substances that help balance, support, or regulate the immune system—bringing it back to homeostasis rather than simply overstimulating it. Key natural regulators include  $\beta$ -glucans, specific medicinal mushrooms, and plant-based compounds, which can be easily incorporated into your wellness routine.**
- 4. An antimicrobial is any agent—natural or synthetic—that kills microorganisms or stops their growth. It is an umbrella term that includes antibiotics, antivirals, antifungals, and antiparasitics, and**

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plays a crucial role in preventing or treating infections in humans, animals, and plants.

5. The zebrafish (*Danio rerio*) is a small, tropical freshwater fish native to South Asia. It gets its name from the distinctive horizontal blue stripes along its body. Today, it is primarily renowned as a crucial "model organism" in scientific and medical research.
6. An antimicrobial is any agent that kills or slows the growth of microorganisms—including bacteria, viruses, fungi, and parasites. It serves as an umbrella term for various specialized medicines and products designed to prevent and treat infections in humans, animals, and plants.
7. Natural immunomodulators are plant-derived, microbial, or dietary compounds that help optimize, stimulate, or suppress the immune system to maintain a healthy balance. Rather than just "boosting" immunity, they act as regulators to fine-tune immune responses, helping the body fight off infections or calm down overactive inflammation.
8. Reactive oxygen species (ROS) are unstable, oxygen-containing chemical molecules that readily react with other molecules in your cells. While they act as vital cellular messengers in small amounts, an excess creates "oxidative stress," which damages DNA, proteins, and lipids, accelerating aging and disease.
9. Key words are good.
10. Significant points are good but have to give result with discussion part tables with graphs and flow chart of significant points.
11. Summary points also be added.
12. After those changes can be published.