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# **Omega 3 Fatty Acids Intake Does Not Decrease the Risk of Rheumatoid Arthritis Occurrence: A Meta-Analysis**

## **Comment on Tanski et al. The Relationship between Fatty Acids and the Development, Course and Treatment of Rheumatoid Arthritis.**

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In an article published in *Nutrients*, Tanski et al. performed a systematic review and concluded that omega-3 fatty acids might contribute to a reduced incidence of rheumatoid arthritis (RA) [1]. We wish to add further data to these conclusions. We performed a meta-analysis to investigate the risk of RA occurrence in patients consuming omega-3 fatty acids.

We searched MEDLINE, EMBASE, and The Cochrane Library to identify all reports of interest that were published prior to 13 October 2022/using the search terms: “(rheumatoid OR arthritis OR joint OR articular) AND omega”. The studied population comprised patients with RA; the intervention analyzed was the oral supplementation of omega-3; the controls were patients receiving a placebo, and the outcome retained was the occurrence of RA cases. We selected articles published in English or French and retrieved a total of 2239 articles. The incidence of RA occurrence in omega-3 users and non-users was calculated by a meta-analysis of proportions which were estimated using the inverse-variance method. The Mantel–Haenszel procedure was used to determine the odds ratio (OR).

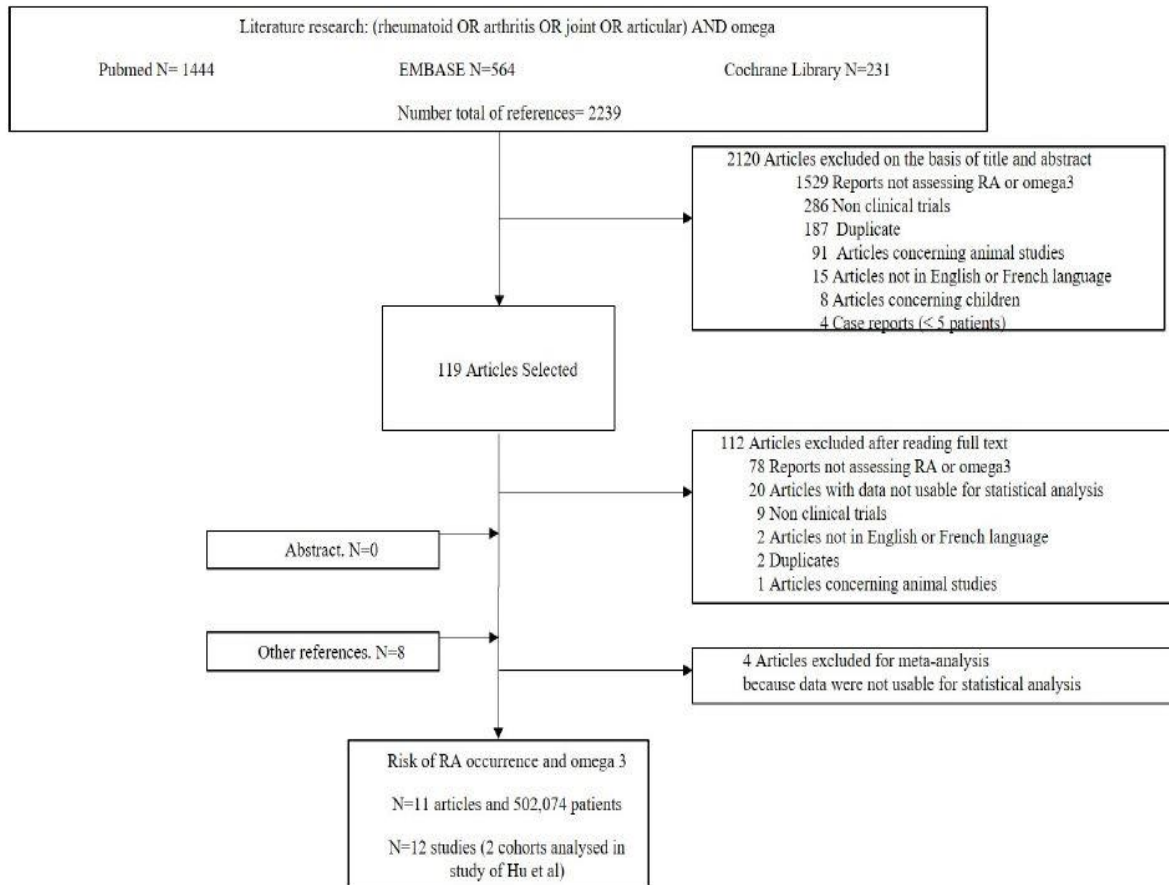
The database research found seven studies to which eight references were added by reading the article references [2–16]. In the study of Hu et al., two cohorts were described [6] from the Nurses’ Health Study. We separately analyzed these two cohorts, which is why the study of Hu et al. appeared twice as “Hu 2015” and “Hu 2015 bis”. Four studies were excluded because data were not usable for meta-analysis [13,14] or because the studies included omega-3 non-users [15,16]. Therefore, we finally included 11 articles, i.e.,

12 studies involving a total of 396,388 patients consuming omega-3 via fish intake ( $n = 10$ ) or fish oil intake ( $n = 1$ ) and 105,686 omega-3 non-users (Figure 1). Five studies were the case–control, and seven were cohorts. In the 12 studies, 6918 RA were reported in omega-3 users with an incidence of 9.2% [6.4, 12.6%]; conversely, in omega-3 non-users, 1960 RA were reported with an incidence of 11.1% [10.5, 11.8%]. There were no differences between the groups in the incidence of RA depending on the type of study (case–control or cohort studies). The overall meta-analysis showed no difference in the risk of RA occurrence depending on the omega-3 consumption (OR = 0.98 [0.87, 1.11]) (Figure 2). The seven cohort studies revealed no difference in the risk of RA occurrence depending on omega-3 consumption (Figure 3). Conversely, the five case–control studies found a decrease in RA risk among omega-3 users.

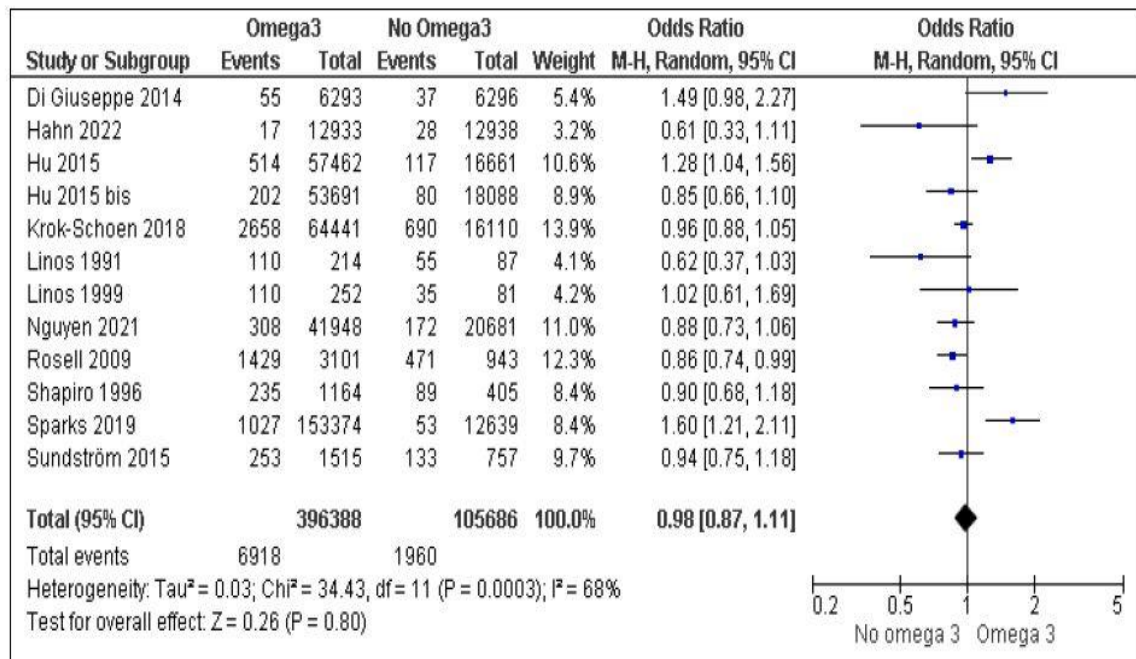
Our results are rather in favor that omega-3 intake is not associated with a decreased risk of RA occurrence, which is different from the conclusion of Tański et al. and is more concordant with the results of Hanh et al. that were not included in the Tanski review.

#### **Author Contributions:**

All authors were involved in drafting this manuscript or critically revising it for important intellectual content. S.M. had full access to all of the study data and takes responsibility for the data integrity and accuracy of the data analysis. Study conception and design: M.S., S.M.. Acquisition of data. S.M., M.S.. Statistical analysis: B.P., S.M.. Interpretation of data, manuscript writing and revision. S.M., B.P., C.D., A.T., M.S. All authors have read and agreed to the published version of the manuscript.



**Figure 1. Flowchart of study selection**



**Figure 2. Forest plot of the risk of RA occurrence between omega 3 users and non-users.**

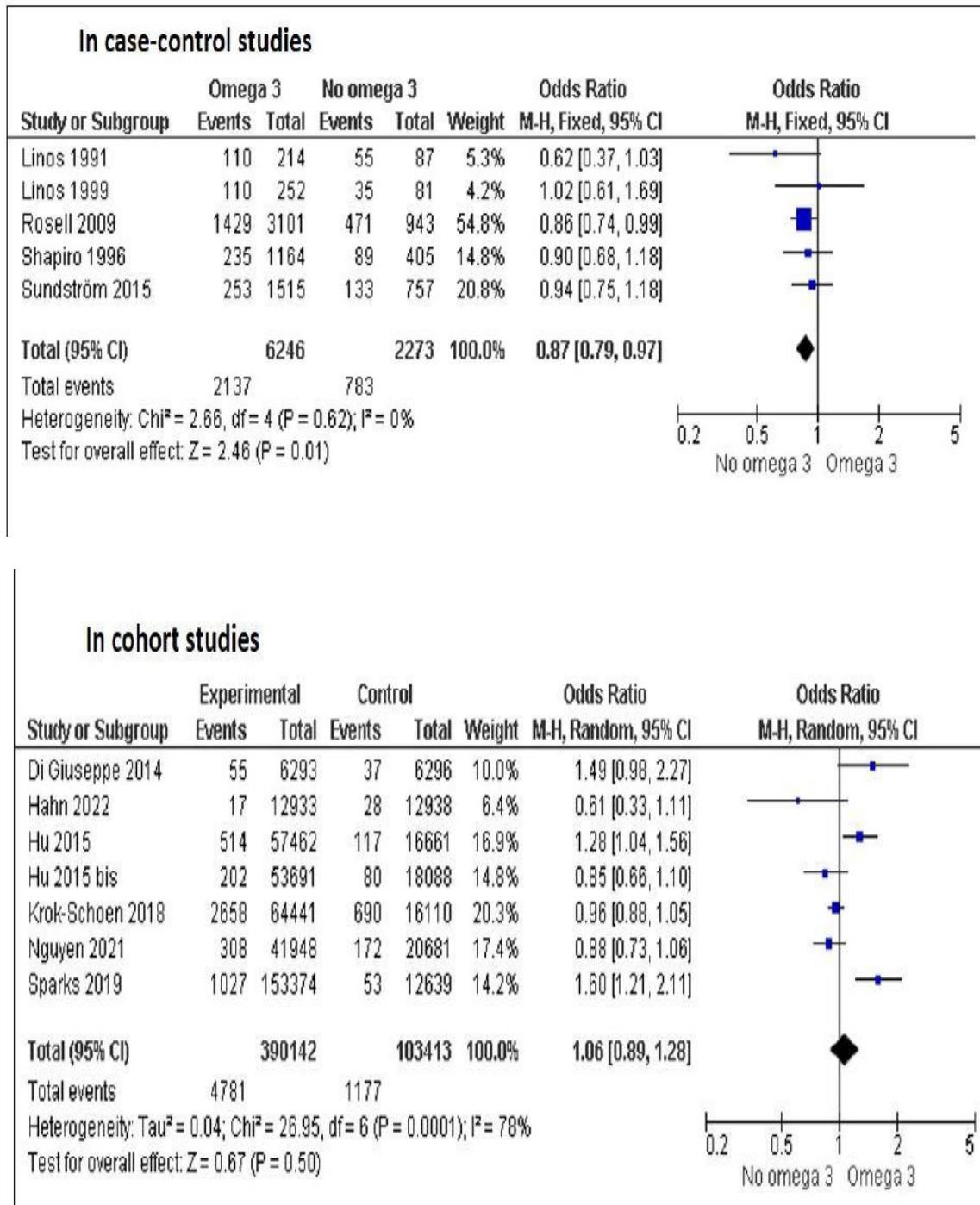


Figure 3. Forest plot of the risk of RA occurrence between omega 3 users and non-users depending on the type of studies [2–12].

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**Conflicts of Interest:**

The authors declare no conflict of interest.

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