IMPACT OF PAIRED COMBINATION OF RETINOIC ACID (ATRA) AND OVALBUMIN ON F344 RAT LUNG TISSUES AND IMPROVEMENT OF RELATED PATHOLOGY BY CITRAL

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Abstract: The impact of retinoic acid (All Trans Retinoic Acid; ATRA) in the development of lung pathology and tissue remodeling are not well established in the literature. As well, the role of citral (inhibitor of retinoid function) in the improvement of lung pathology was not ascertained under an in vivo setting. Therefore, it is hypothesized that ATRA and ovalbumin exposure will sensitize lung tissues leading to lung tissue pathology and that citrals (C1 and C2) will reverse or ameliorate the related pathological damage to lung tissues. The study used an IACUC approved between-subject in vivo randomized split plot factorial design (F344 rat model; N=40). Animals were exposed to 8 different treatments including vehicle, OVA, ATRA, citrals (C1 and C2) and their ovalbumin combinations (OVA+ ATRA, OVA+ C1, and OVA+ C2) by intra-peritoneal route. Rat weight data and blood were collected on Days 1 and 21, all animals were sacrificed on day 21 and lung tissues were processed for histopathology. Results from weights and blood (ANOVA and Duncan) as well as from the histopathological analysis supported the findings that exposure of F344 rats to OVA combinations with ATRA and citrals showed various levels of lung tissue damage that was improved or worsened by either C1 or C2. This promising study showed variable responses on the interaction of ovalbumin, citrals, and ATRA as related to their damage/improvement of related lung tissue pathologies.