

# Bioactives generated by Patented Boron-Doped Diamond Electrolysis Technology maintains important features of aging immune system in mice model

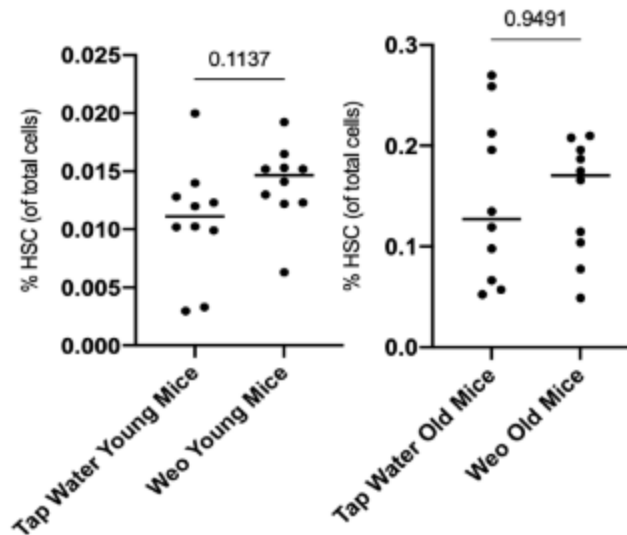
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Aging has profound negative effects on the function of the immune system, contributing to enhanced susceptibility of the elderly to infections and decreased responses to immunization. It is well-known that with age, there are substantial changes in both B- and T-lymphoid lineages of the immune system, notably a decrease in production of B lymphocytes within the bone marrow. Studies attribute this deficiency to a shift in the differentiation of Hematopoietic Stem Cells (HSC) to increased generation of myeloid cells and decreased production of lymphoid cells. Common lymphoid progenitors (CLP) is the main population responsible for producing progenitors of B cells – the antibody producers that provide immunity upon vaccination. Given their importance for responses to vaccines, this initial study investigated whether consumption of Weo water would help reduce age-related changes of B lymphocytes production. Not only was a positive finding elucidated regarding this adverse physiological change, the researchers also found Weo water increased the percentage of HSC,

Multipotent progenitors (MPP) and Lymphoid-primed progenitors (LMPP) progenitors in young mice. This suggests that drinking Weo water at a younger age may be helpful in terms of maintaining a healthier immune system with associated aging.

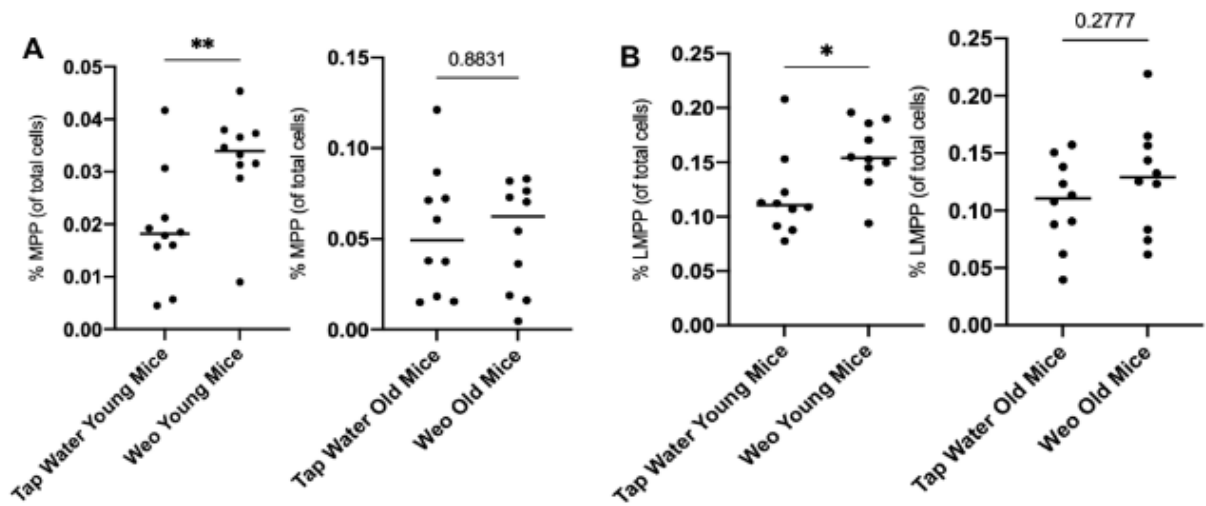
The experimental research design by the esteemed researchers from INSERM in collaboration with Charles River, Dr. Reem Al-Daccak and Dr. Armand Bensussan investigated the impact of Weo on early hematopoietic progenitors. A quantification of these progenitors in bone marrow of young and old male mice were utilized with two groups of young mice - one drinking Weo water and the other drinking tap water (control) for (4 weeks) and two groups of old mice - one drinking Weo water and other drinking tap water. On Day 29, bone marrow from both femurs and tibias was collected from all animals and HSC were isolated from all samples then analyzed for marker profile by flow cytometry to determine the percentage of progenitor populations: MPP, LMPP and CLP that generate B-lineage cells. The results indicated a preservation of the HSC pool in older mice and an increase in this pool in young mice.



*Weo water fed mice demonstrated a trend towards an increase of the percentage of HSC in young mice and maintained HSC in older mice. These results imply that regardless of age, Weo water consumption may contribute to maintaining the pool of HSC.*

Given the impressive aforementioned results, the researchers then studied the percentage of different progenitor's population (MPP & LMPP) in young mice. It was found that Weo water consumption significantly increased the percentage of MPP and LMPP in young mice while maintaining the

percentages of these progenitors in old mice.



Collectively, these findings indicate Weo water imparts a positive impact on old mice, in particular the CLP population which is the main population responsible for producing the B-lineage. This signifies that the **defect of response to immunization often observed in elderly, has potential to be improved by drinking Weo water.** Weo also has a positive impact on young mice by increasing the percentage of HSC, MPP and LMPP progenitors, which could suggest that drinking Weo at younger age would empower the pool of HSC and progenitors that can be **helpful in maintaining a healthier, more robust immune system with aging.**

Conclusion from this study suggests that Weo preserves the percentage of HSC in old while increasing this important cell pool in young mice. This is a significant finding, relevant to the knowledge that as we age the immune system has challenges in regards to B cell production - affecting the effectiveness of vaccination, as B cells are responsible for creating antibodies against infections. and thus prevents senescence of the specific (adaptive) immune system.