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## The role of IL-1 in anemia of chronic kidney disease

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Anemia of chronic kidney disease (CKD) may be due to impaired renal erythropoietin (EPO) synthesis, EPO resistance and hepcidin mediated iron malabsorption. Interleukin (IL-1), an important pro-inflammatory cytokine, is normally controlled by a receptor antagonist (IL1Ra). IL1Ra-KO (RaKO) mice show arthritis and excessive inflammation. The aim of this study was to characterize the anemic state of RaKO mice with CKD. RaKO and wild type (WT) mice were divided into four groups: WT-C, WT-CKD, RaKO-C, RaKO-CKD. CKD or control states were induced by 5/6 nephrectomy or sham operations. Mice were sacrificed after 12 weeks from surgery. RaKO animals developed chronic arthritis, in association with increased levels of liver CRP and kidney IL6. Serum creatinine and urea levels were similar in the 2 CKD groups, but RaKO-CKD had higher degrees of renal inflammation and fibrosis vs. WT-CKD. Hematocrit levels were decreased only in RaKO-CKD (but not in WT-CKD). Serum iron levels were reduced in both RaKO groups and were even lower in RaKO-CKD vs. RaKO-C. Liver hepcidin mRNA levels were equally increased in both RaKO groups vs. WT-C, but were more increased in WT-CKD vs. RaKO. Renal HIF2 levels were not increased in RaKO CKD. Bone marrow EPO-R mRNA levels were significantly decreased in RaKO-CKD compared to all other groups. Thus, anemia appeared only in RaKO-CKD and not in WT-CKD. Systemic inflammation was higher in RaKO-CKD; leading to hepcidin mediated iron malabsorption, inhibited kidney HIF2 response and decreased bone marrow EPO-R. Reducing IL-1 effects may be an additional therapeutic strategy in CKD-associated anemia.

### Biography

Inbar Bandach is a second year PhD student under the supervision of Prof. Segev and Prof. Landau in Department of Microbiology and Immunology at Ben-Gurion University of the Negev in Israel. In her master's thesis, she worked on "Anemia of chronic kidney disease and mainly focused on the role of IL-1 in anemia of CKD".

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