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**Title:** Adipokines and ghrelin in chronic obstructive pulmonary disease

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**Body:** Objective: to determine associations between the adipokines tumor necrosis factor-alpha (TNF-a) and its receptors sTNFR I, II, leptin, adiponectin, resistin, ghrelin, pulmonary function testing, bone mineral density (BMD) and nutritive status in severe and very severe chronic obstructive pulmonary disease COPD. Materials: we determined BMD, serum adipokine and ghrelin in 48 patients with severe and very severe COPD and 52 age and sex matched controls. BMD at lumbar spine (LS) and femoral neck (FN) and parameters of body composition were measured by dual-energy X-ray absorptiometry. Results: the levels of adiponectin, resistin, TNF-a and its receptors sTNFR I, II were higher, but leptin and ghrelin levels were low in COPD than in controls. It was a correlation between leptin ( $r=0,58$ ,  $p<0,05$  at LS;  $r=0,64$ ;  $p<0,01$  at FN) and relationship between adiponectin ( $r=-0,54$ ,  $p<0,05$  at L2-L4;  $r=-0,62$ ;  $p<0,01$  at FN), TNF-a ( $r=-0,58$ ,  $p<0,01$  at L2-L4; at FN  $r=-0,64$ ,  $p<0,01$ ) and BMD. It was negative association between serum resistin ( $r=-0,43$ ,  $p<0,05$ ), sTNFR-I ( $r=-0,41$ ,  $p<0,05$ ), sTNFR-II ( $r=-0,44$ ;  $p<0,05$ ) and positive correlation with ghrelin ( $r=0,42$ ,  $p<0,05$ ) and BMD at FN only. Leptin and ghrelin had direct relationship with body mass index, fat mass. Adiponectin level inversely correlated with body mass index, fat mass, resistin and sTNFR-I, II concentrations. It was correlations between SaO<sub>2</sub>, pCO<sub>2</sub>, pO<sub>2</sub> and TNFR I, II, resistin, and the relationship between leptin, adiponectin, TNF-a levels and pCO<sub>2</sub>. Conclusion: Results shows possibly role of adipokines and ghrelin in the increasing of bone loss in severe and end stage COPD. However, larger studies are needed to further evaluate the relationship between adipokines and BMD in COPD.