

# ADVANCED GLYCATION END PRODUCTS ASSOCIATED WITH SKIN AUTOFLUORESCENCE AND SERUM CARBOXYMETHYL LYSINE LEVELS IN ACROMEGALY PATIENTS

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Advanced glycation endproducts (AGEs) are a group of modified molecules formed by nonenzymatic reactions between the aldehydic group of reducing sugars with nucleic acids, proteins or lipids. Formation and accumulation of AGEs are related to the aging process and are accelerated in diabetes. AGEs are known to be generated in hyperglycemia, but their production also occurs in diseases characterized by oxidative stress and inflammation.

**The aim of this study is to measure advanced glycation end product and their relationship with carotid intima media thickness (CIMT) in acromegaly patients.**

**Method:** A case-control study was performed in 225 acromegaly patients (F/M: 116/109, 50.6±11 yrs.) and age and sex matched 100 controls (F/M: 58/42, 52.6 ± 11 yrs.). Skin autofluorescence (SAF) is a validated noninvasive measure of tissue AGEs. SAF was measured with the AGE Reader. Serum carboxymethyl lysine (sCML) was measured with ELIZA method. HbA1c and Growth hormone were measured by HPLC and immunochemiluminescence method respectively. CIMT was assessed with Doppler ultrasonography.

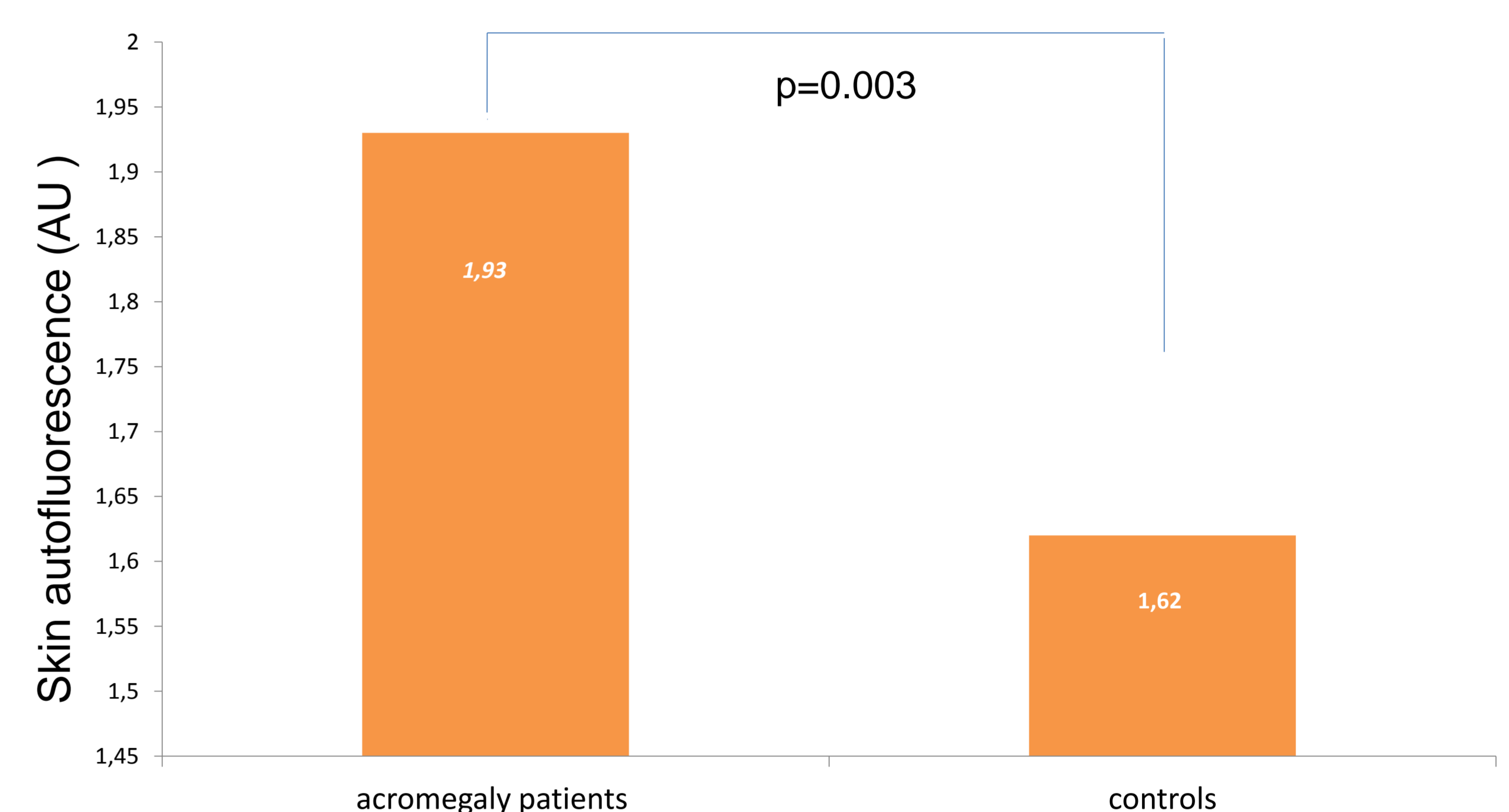
**Results:** SAF was higher in acromegaly patients (1.95 ± 0.32 arbitrary Units (AU) compared with controls (1.62±0.33 AU) (p=0.003). serum CML levels were higher in acromegalics (0.245±0.11ng/dl) compared with controls (0.175±0.07 ng/dl) (p=0.002).

CIMT measures were 0.62±0.14 mm and 0.59±0.14 mm for acromegaly and control groups respectively (P<0.0001). Correlation analysis showed a positive correlation between SAF and serum CML (r=0.35, p=0.002), CIMT (r=0.25, p=0.004) and serum growth hormone levels (r=0.33, p=0.03). sCML levels were higher in uncontrolled acromegaly patients (nadir GH<1ng/dl, IGF-1 in normal range) compared to controlled patients.

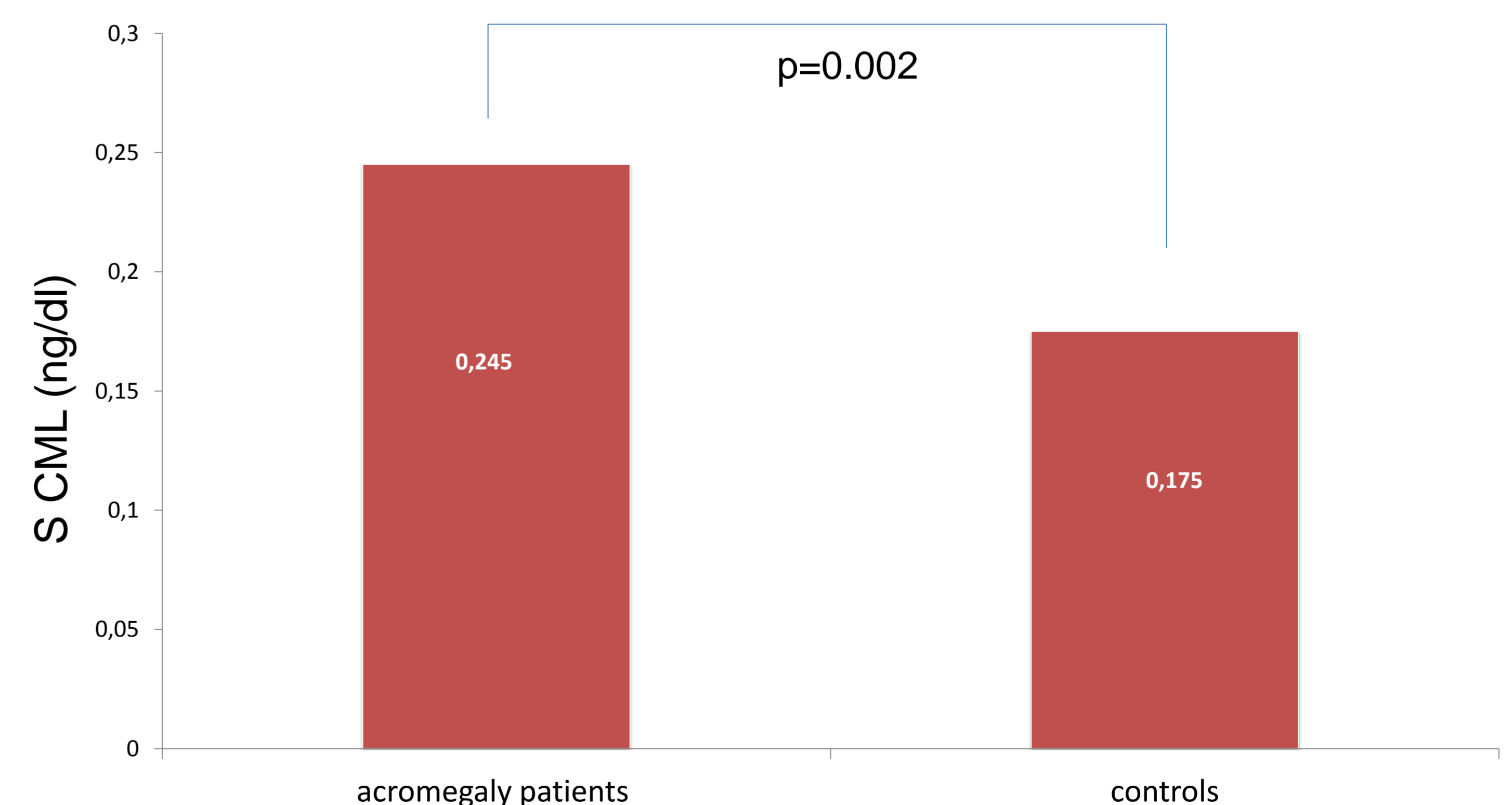
**Conclusion: Accumulation of tissue AGEs (Skin autofluorescence and sCML levels) are increased regardless of hyperglycemia in acromegaly patients. Increased advanced glycation end products may have a role in the cardiovascular outcomes of acromegaly patients**

**Table 1: Skin auto fluorescence(SAF), HbA1c and sCML levels of the study groups**

	Diabetes (+) acromegaly patients (n=60)	Diabetes (-) acromegaly patients (n=165)	Control Group (n=100)	p
HbA1c(%)	7.05±1.1	5.4±0.6	5.4±0.4	0.001
SAF (AU)	1.93±0.3	1.88±0.6	1.62±0.37	0.01
sCML (ng/dl)	0.245±0.11	0.172±0.06	0.174±0.12	0.02



**Figure 1: SAF measurements of the study groups**



**Figure 2: sCML levels of the study groups**