Involvement of oxLDL in the biology of head and neck cancer cell lines

Nadège Kindt[1,2,3], Fabrice Journé[1,3], Sven Saussez[1], Stéphane Carlier[2]

1 . Laboratoire d'Anatomie Humaine et Oncologie expérimentale, Institut SANTE, UMONS 2. Laboratoire de Cardiologie, Institut SANTE, UMONS

3. Laboratoire d'Oncologie et Chirurgie Expérimentale, Institut Jules Bordet, Université Libre de Bruxelles

Background: Cardiovascular diseases and cancers are the two main causes of death worldwide. They share common factors in their progression as genetic alterations, oxidative stress, angiogenesis and inflammatory process. Also, it is well known that oxidized low-density lipoprotein (oxLDL) plays a major role in the atherosclerotic plaque formation notably by macrophage foam cells formation. The goal of this research is to answer the question: « Does oxLDL accumulation influence tumor progression? »

Methods: We have analyzed by immunofluorescence the expression of two oxLDL receptors, CD36 and LOX-1 in three head and neck cancer cell lines (FaDu, Detroit 562 and UPCI-SCC-131) treated or not with oxLDL (20µg/ml) during 48h. After, we have examined the impact of oxLDL (20µg/ml) on cell migration after 48h by Boyden chamber and analyzed the Wnt/β-catenin pathway, which is implicated in cell migration, by Western blotting. Statistical analyses were conducted with the Student's t-test.

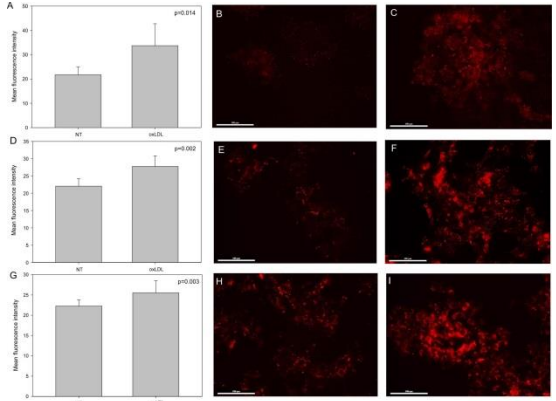

Figure 1: CD36 expression increases in oxLDL treated head and neck cancer cells (A, D and G).Immunofluorescence of CD36 in FaDu (B and C), Detroit 562 (E and F) and UPCI-SCC131 cell lines (H and I) (p=0,014; p=0,002; p=0,003 respectively; n=6).

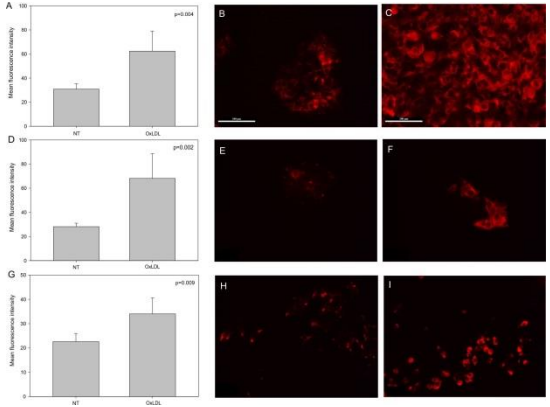

Figure 2: Lox-1 expression increase in oxLDL treated head and neck cancer cells (A, D and G). Immunofluorescence of Lox-1 in FaDu (B and C), Detroit 562 (E and F) and UPCI-SCC131 cell lines (H and I) (p=0,004; p=0,002; p=0,009 respectively; n=6).

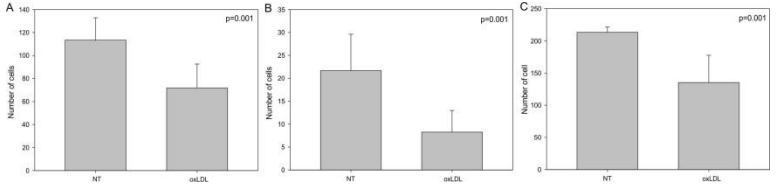

Figure 3: Cell migration decreases when FaDu (A), Detroit 562 (B) and SCC131 (C) cell lines are treated with oxLDL (p=0,001, n=9)

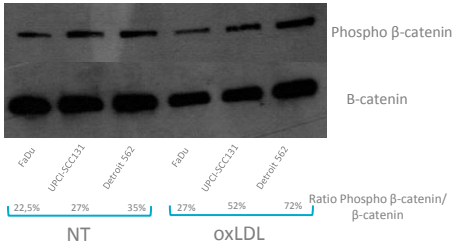

Figure 4: Increase of β-catenin phosphorylation in oxLDL treated head and neck cancer cell lines.

Discussion:These results are in line with the recent work of Fang *et al.* (Nat Commun, 2019) who demonstrated that high CD36 expression in colorectal cancer conducts to the inhibition of the β-catenin signaling cascade leading to colorectal tumor inhibition.

Conclusion: OxLDL treatment increases CD36 and LOX-1 expression and inhibits β-catenin signaling that might lead to the decrease of cancer cells migration. These factors should be examined in patient samples to validate this mechanism in cancer progression.

There are no conflict of interest from the authors