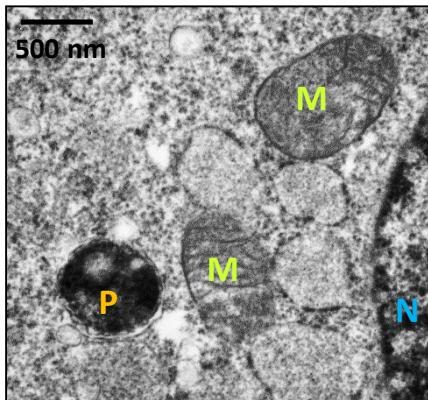
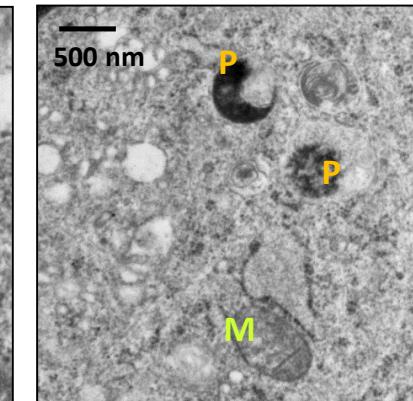
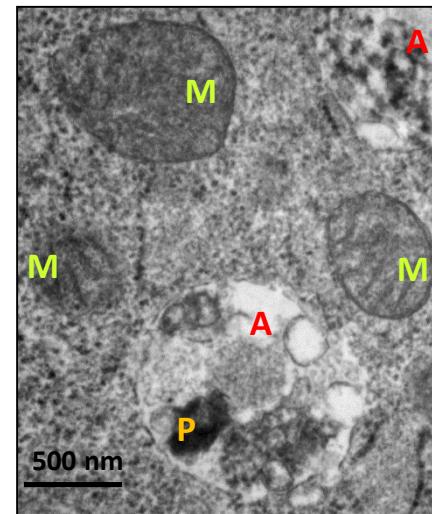


# 7KC induces modifications of peroxisome and mitochondrial morphology

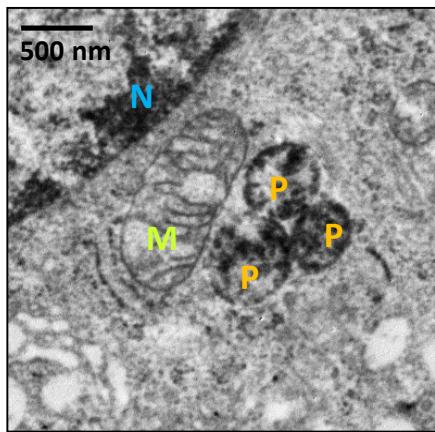
Control



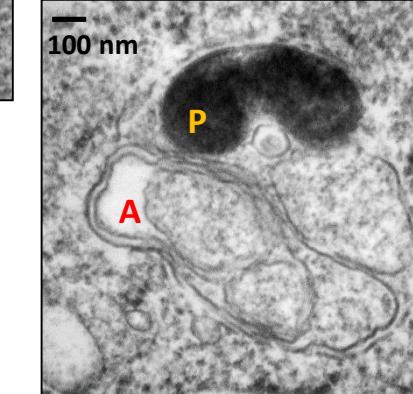
7KC (25  $\mu$ M)



EtOH (0.2 %)



- Mitochondria (M)
- Peroxisome (P)
- Autophagosome / Autophagolysosome (A)
- Nucleus (N)

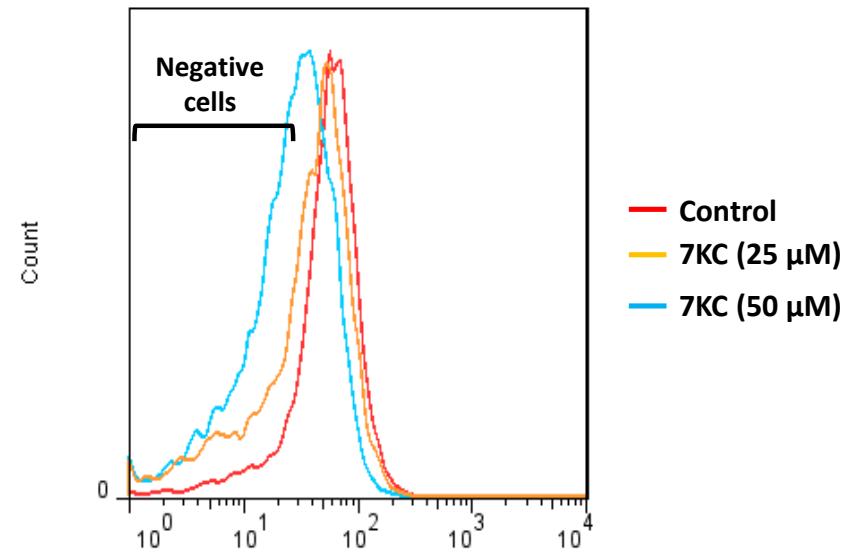
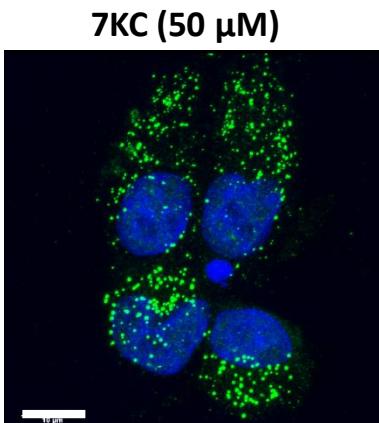
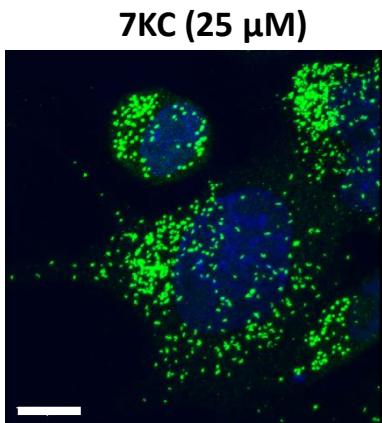
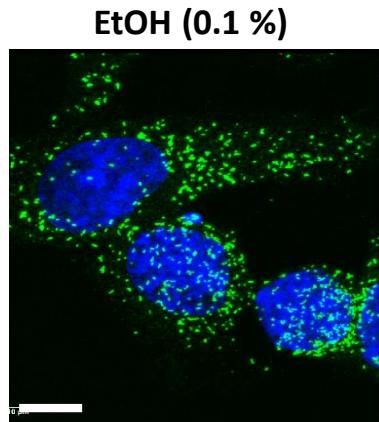
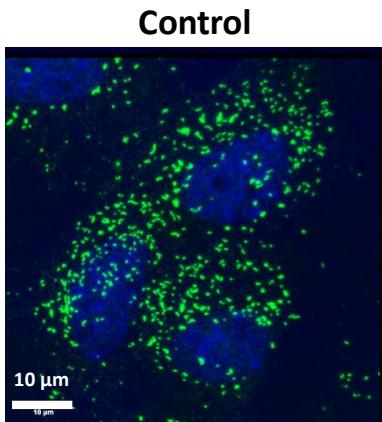


7KC (low concentration)



- Induction of autophagosomes (pexophagy)
- Modification of peroxisomal shape
- *No effect on mitochondrial morphology*

# 7KC-induced modifications of the peroxisomal topography and mass: evaluation with Abcd3 expression

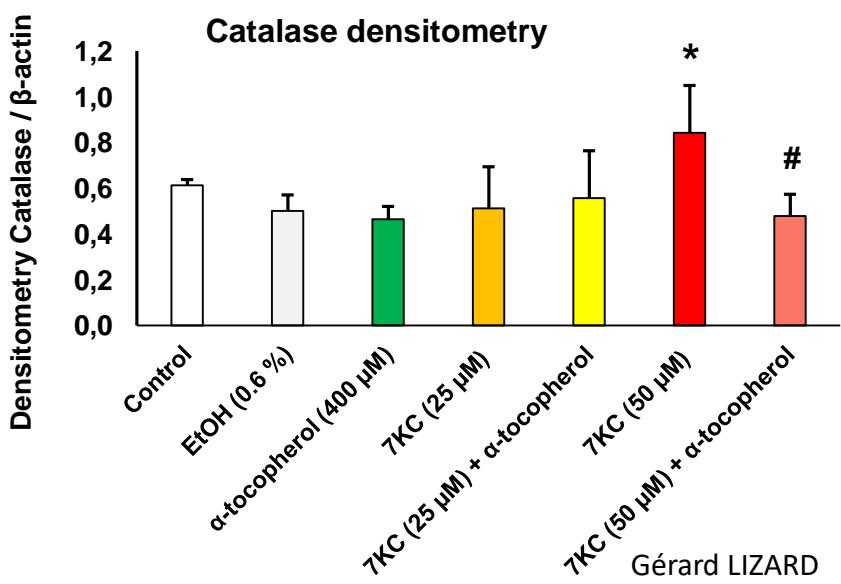
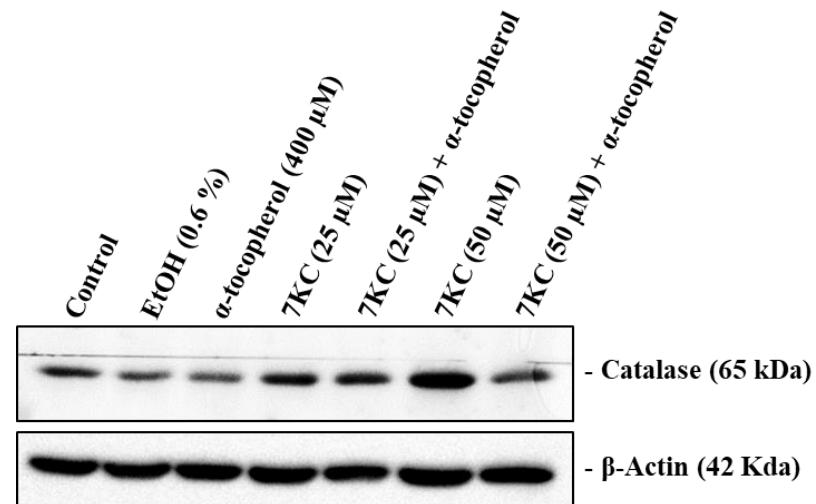
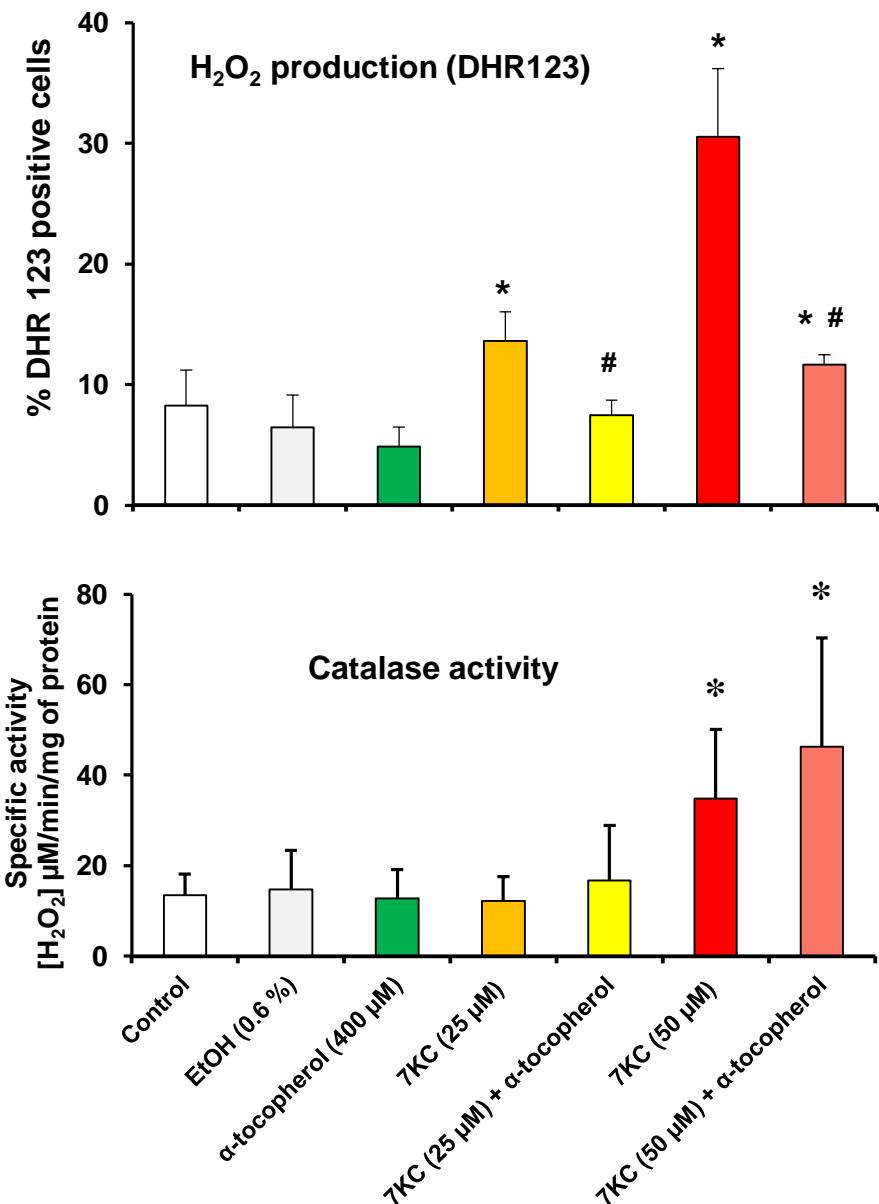


## % of Abcd3 negative cells :

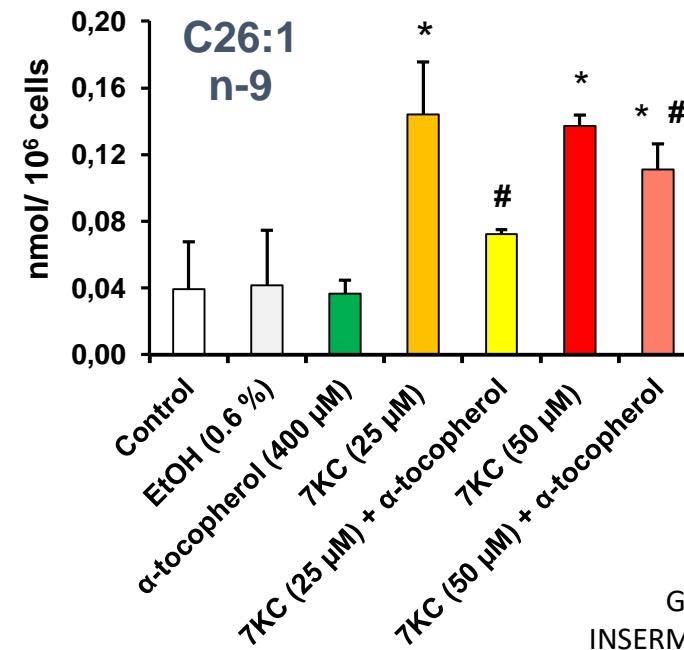
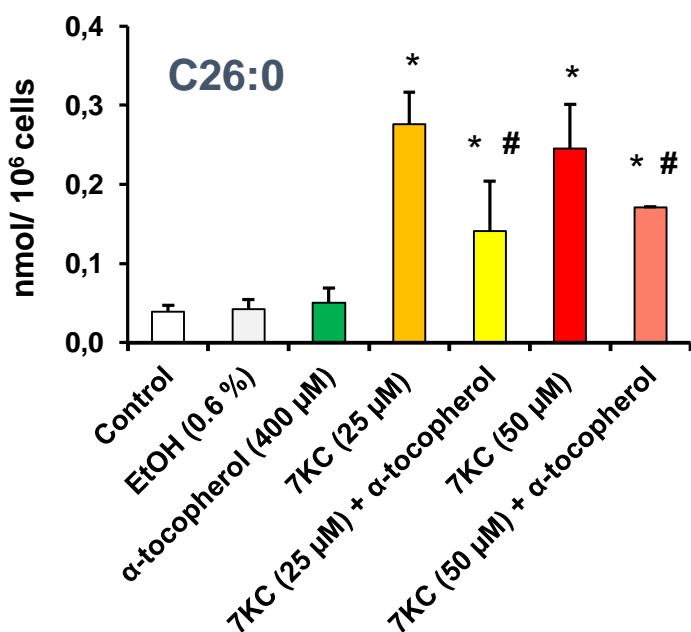
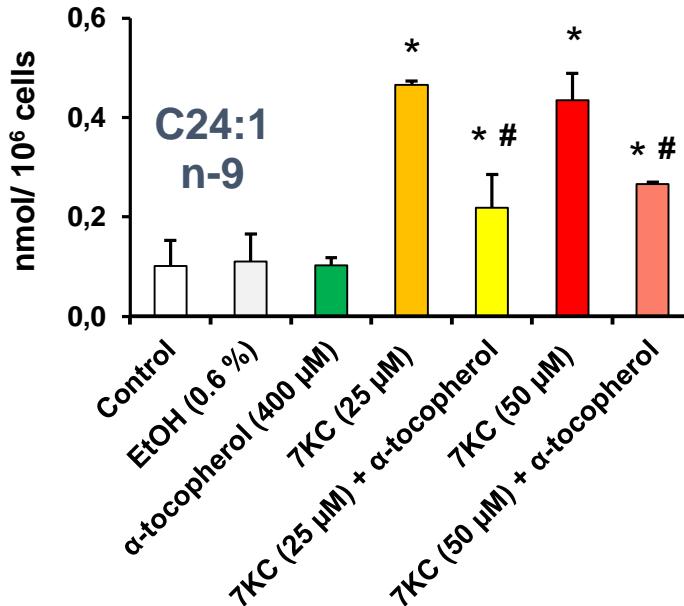
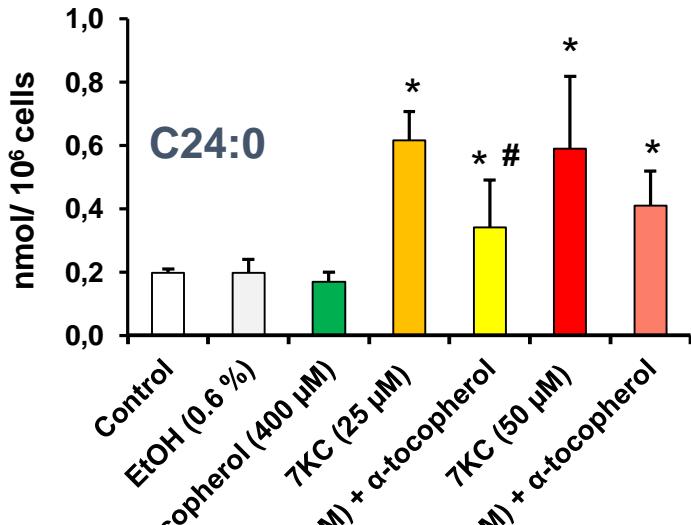
Control	7%
EtOH (0.1%)	7%
7KC (25 $\mu$ M)	20 %
7KC (50 $\mu$ M)	27 %

- Topographical change of peroxisomes (aggregation / clusterisation)
- Abcd3 expression (peroxisomal mass) is reduced by 7KC even at low concentration

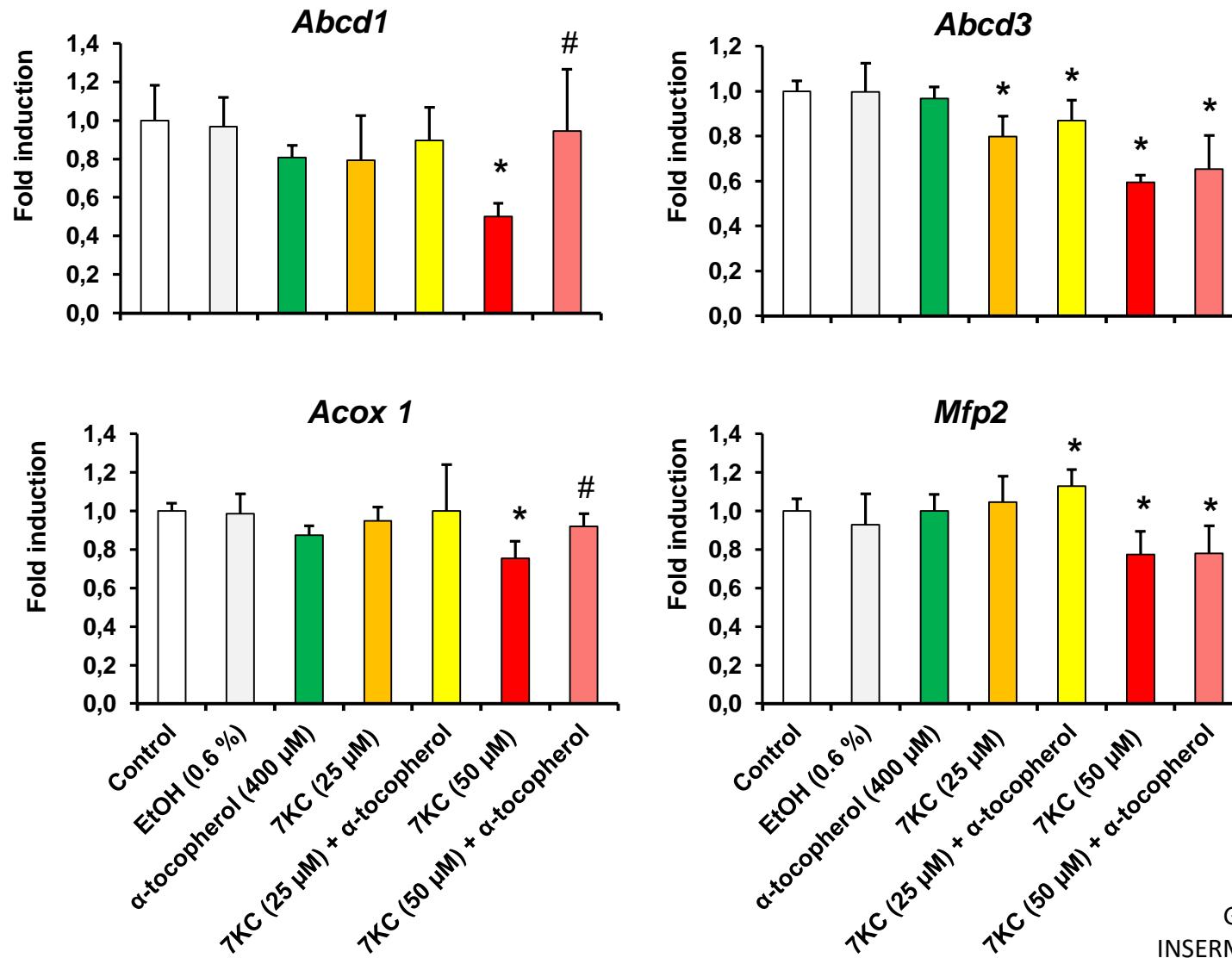
# 7KC-induced the overproduction of H<sub>2</sub>O<sub>2</sub> and enhances catalase activity and expression



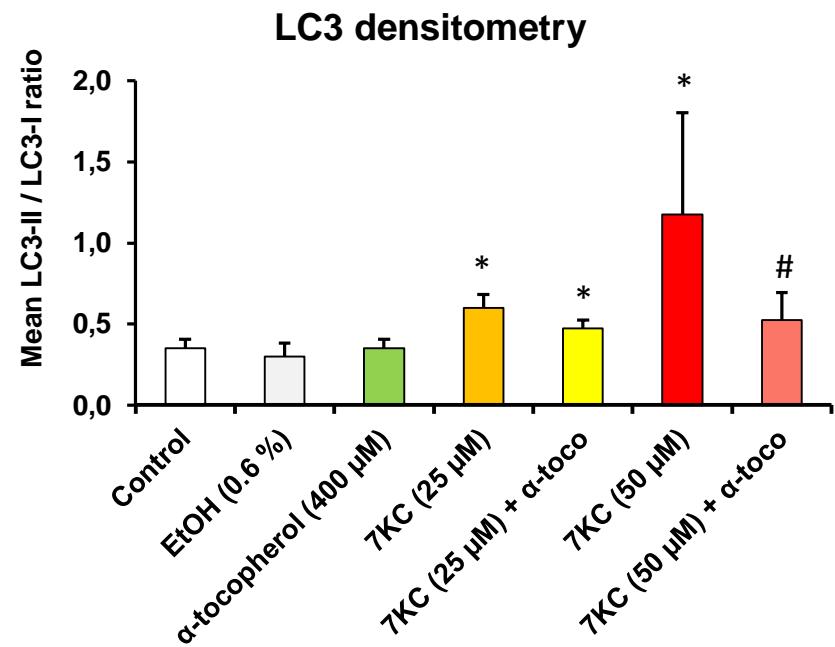
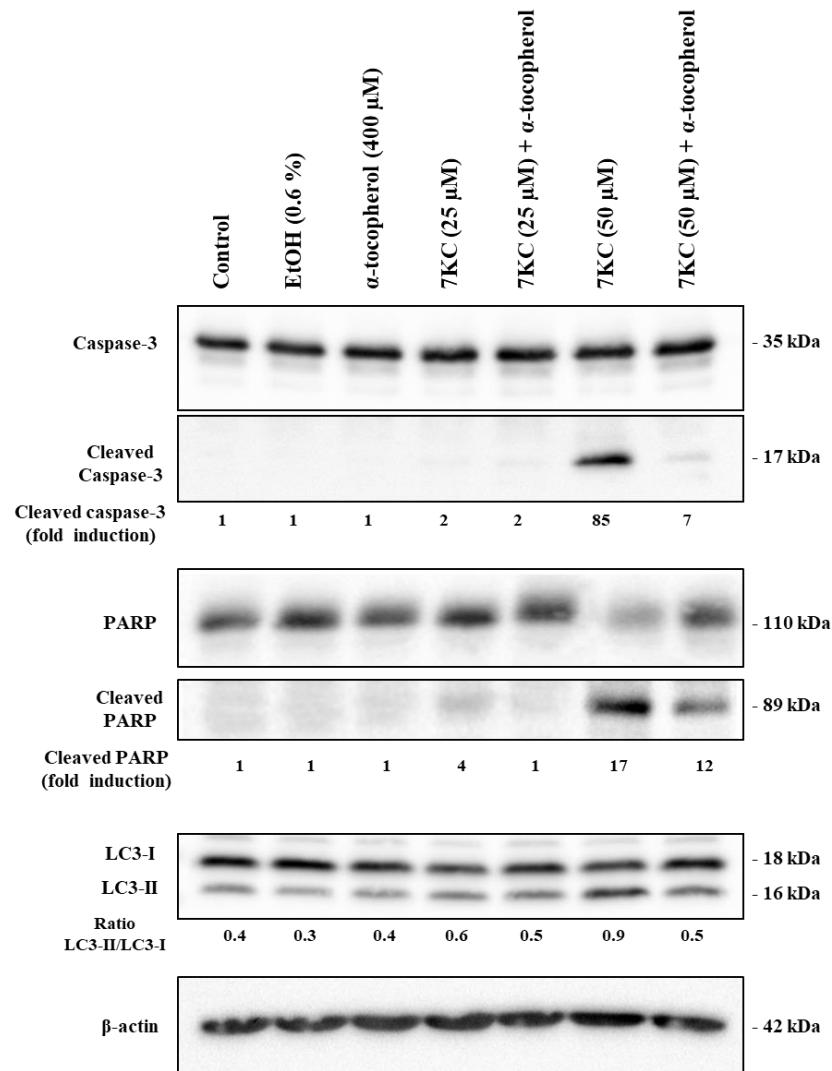
# 7KC favors VLCFA-accumulation (reduction of peroxisomal $\beta$ -oxidation)



# 7KC reduces the expression of transporters (*Abcd1*, *Abcd3*) and enzymes (*Acox1*, *Mfp2*) associated with peroxisomal $\beta$ -oxidation



# 7KC-induced oxiapoptophagy : OXIdative stress + APOPTOsis + autoPHAGY

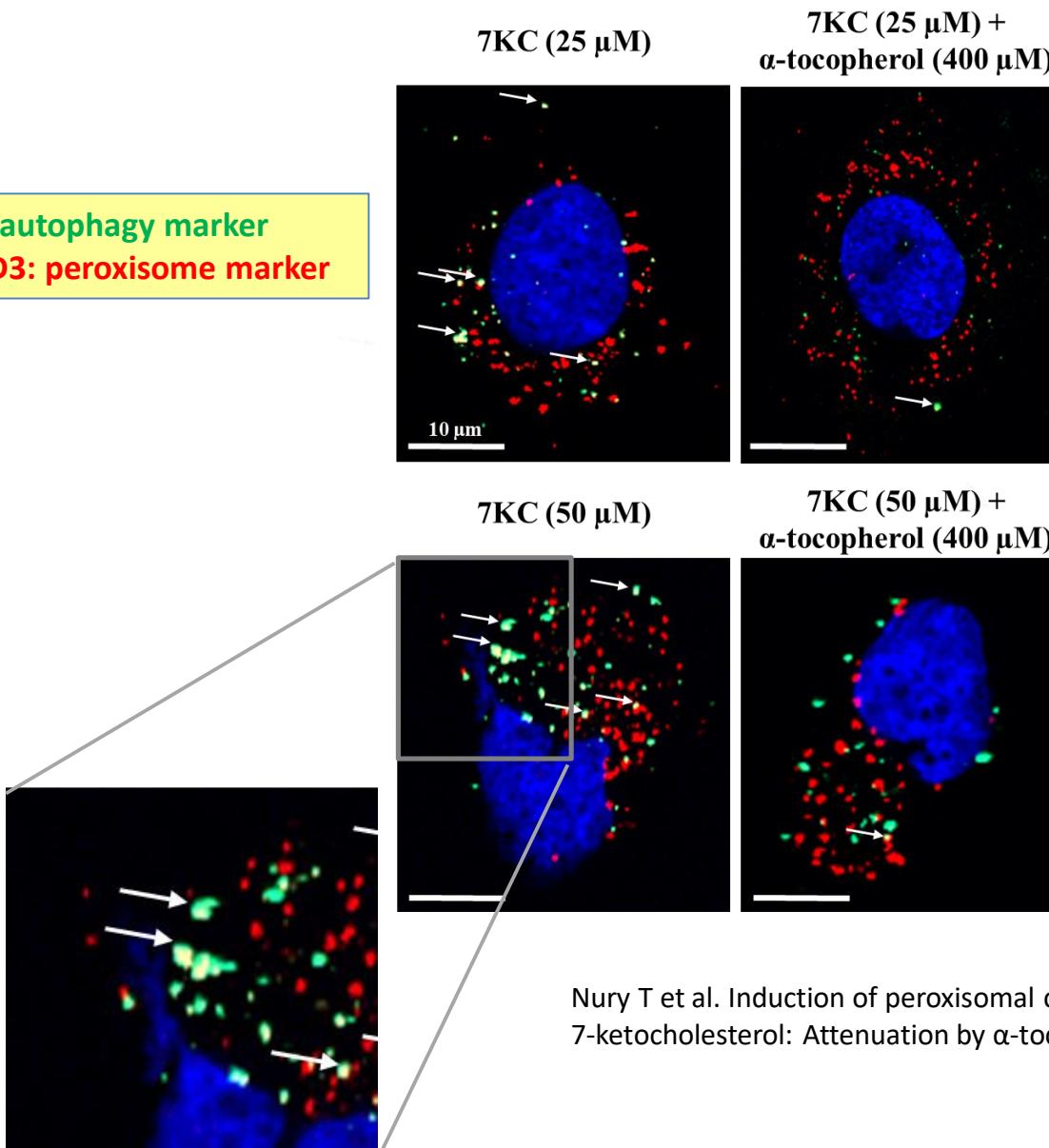


Nury T et al. Induction of oxiapoptophagy on 158N murine oligodendrocytes treated by 7-ketocholesterol-, 7 $\beta$ -hydroxycholesterol-, or 24(S)-hydroxycholesterol: Protective effects of  $\alpha$ -tocopherol and docosahexaenoic acid (DHA; C22:6 n-3). *Steroids.* 2015; 99(Pt B): 194-203.

Nury T et al. Induction of oxiapoptophagy, a mixed mode of cell death associated with oxidative stress, apoptosis and autophagy, on 7-ketocholesterol-treated 158N murine oligodendrocytes: impairment by  $\alpha$ -tocopherol. *Biochem Biophys Res Commun.* 2014; 446(3): 714-9.

# 7KC-induced oxiapoptophagy is associated with pexophagy

P62: autophagy marker  
ABCD3: peroxisome marker



Pexophagy  
(yellow dots)  
is observed  
both  
with 7KC (25-50  $\mu$ M)

Nury T et al. Induction of peroxisomal changes in oligodendrocytes treated with 7-ketocholesterol: Attenuation by  $\alpha$ -tocopherol. *Biochimie*. 2018 ;153:181-202.

