

PERIPANCREATIC AND PERIAORTIC ADIPOSE TISSUES AND OBESOGENIC DIET: COMPARISON BETWEEN PALM AND OLIVE OIL IN THE RAT

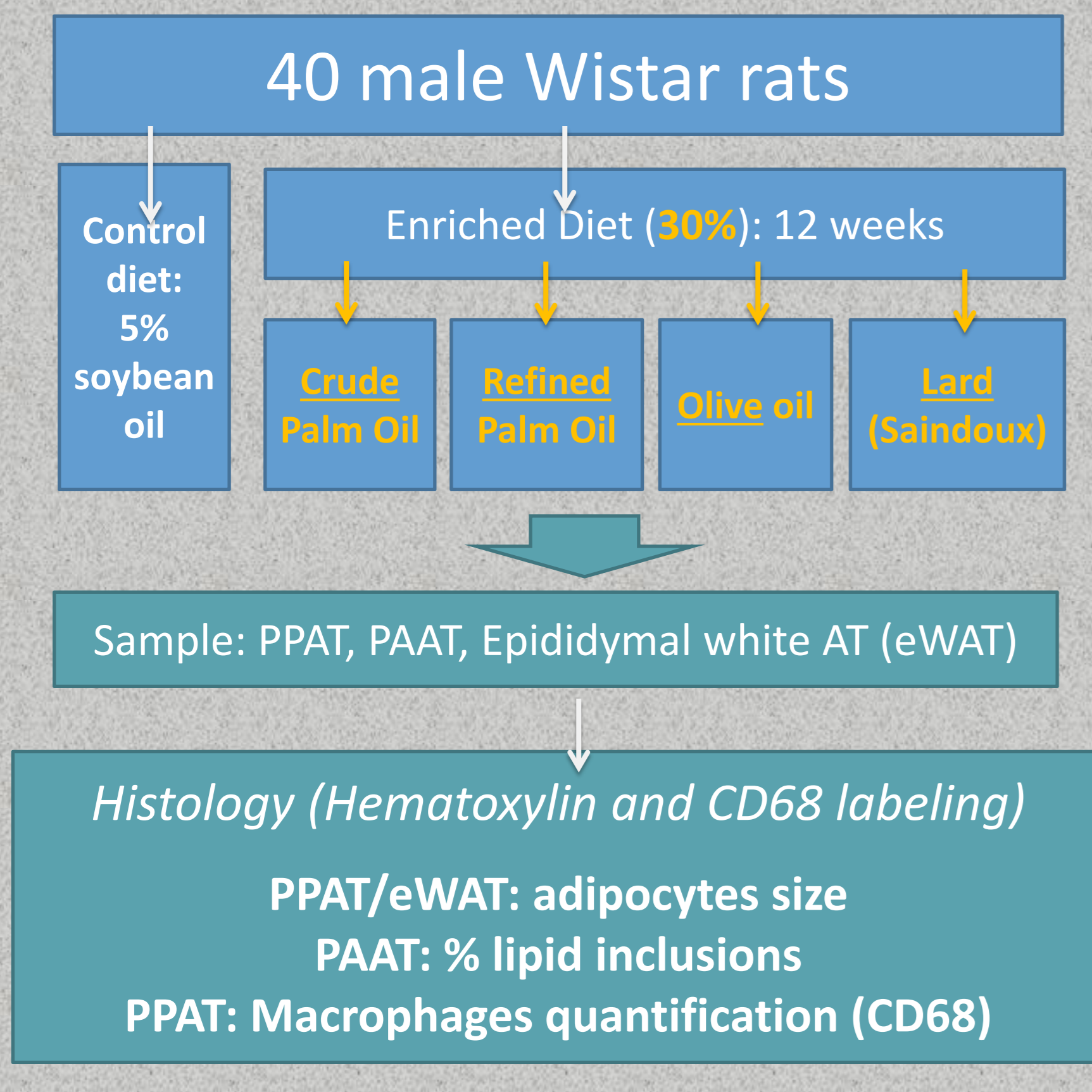
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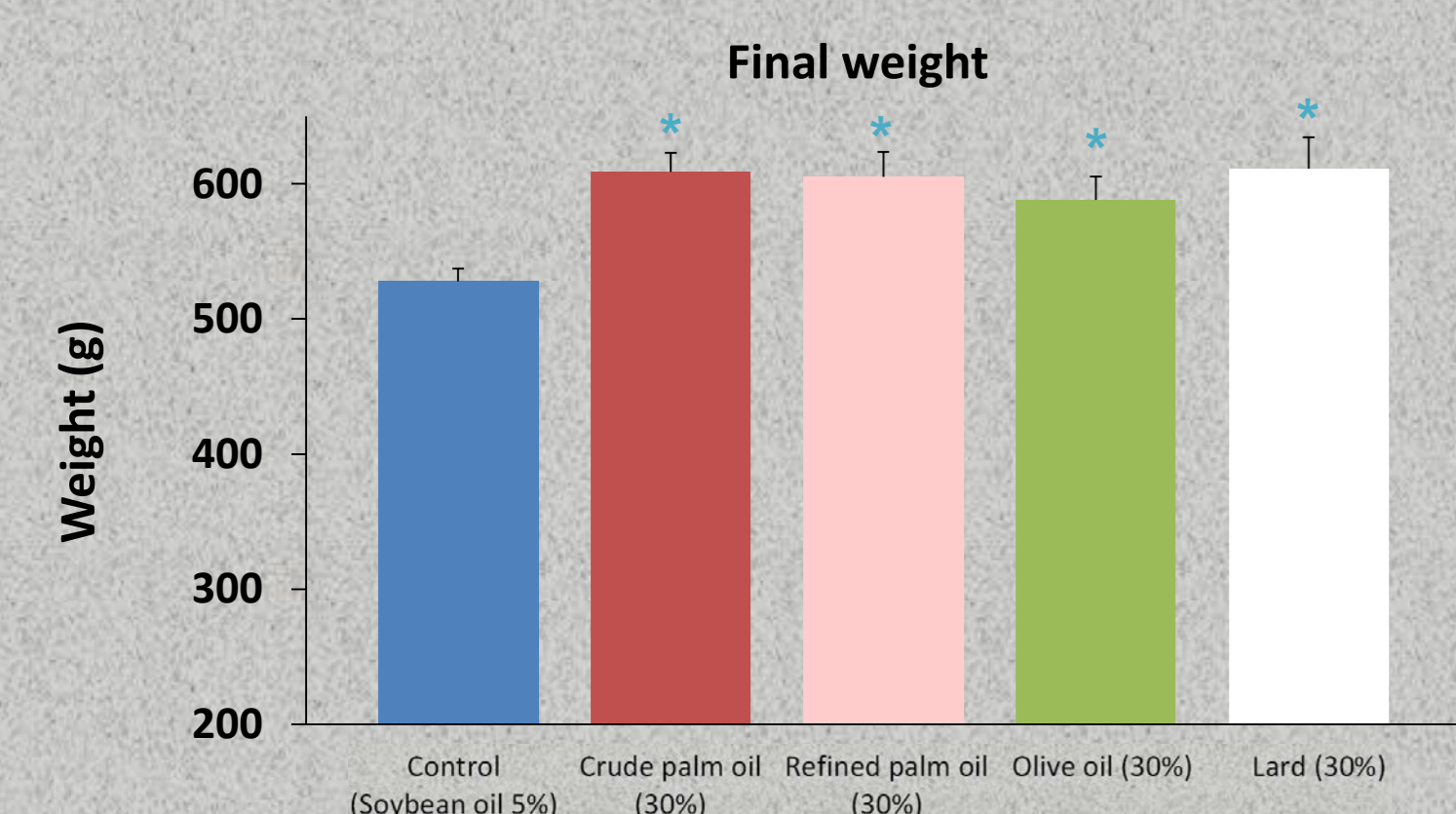
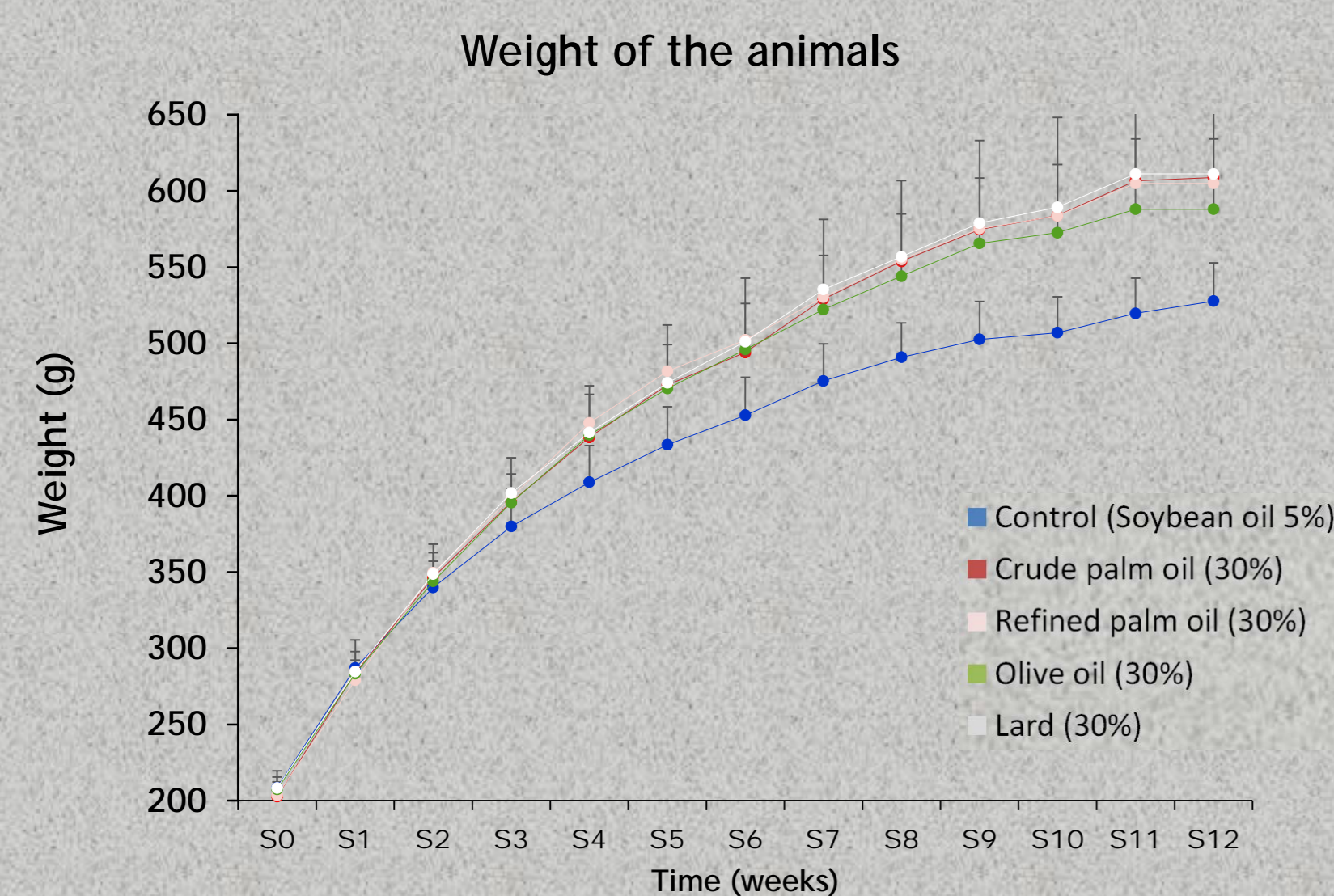
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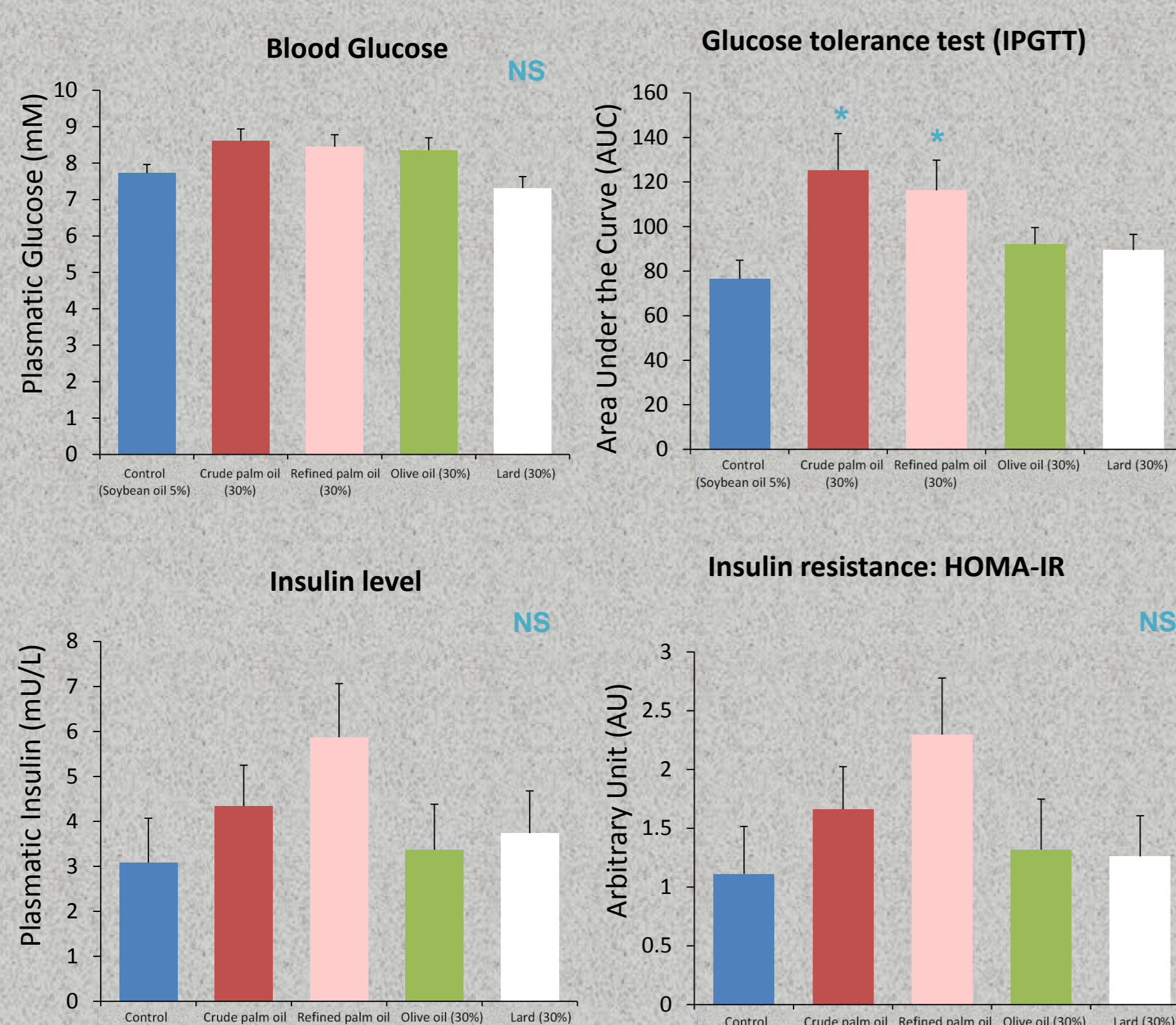
METHODS



I- Similar increase of weight regardless of the obesogenic diet



II- The palm oil diets (red and refined) slightly increase glucose intolerance and insulin resistance

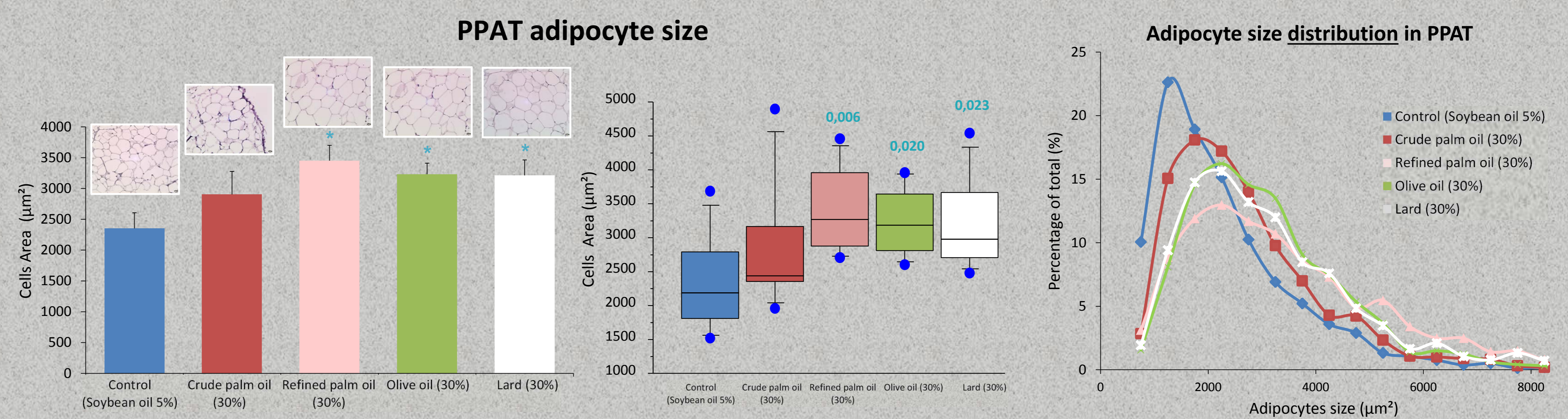


AIMS

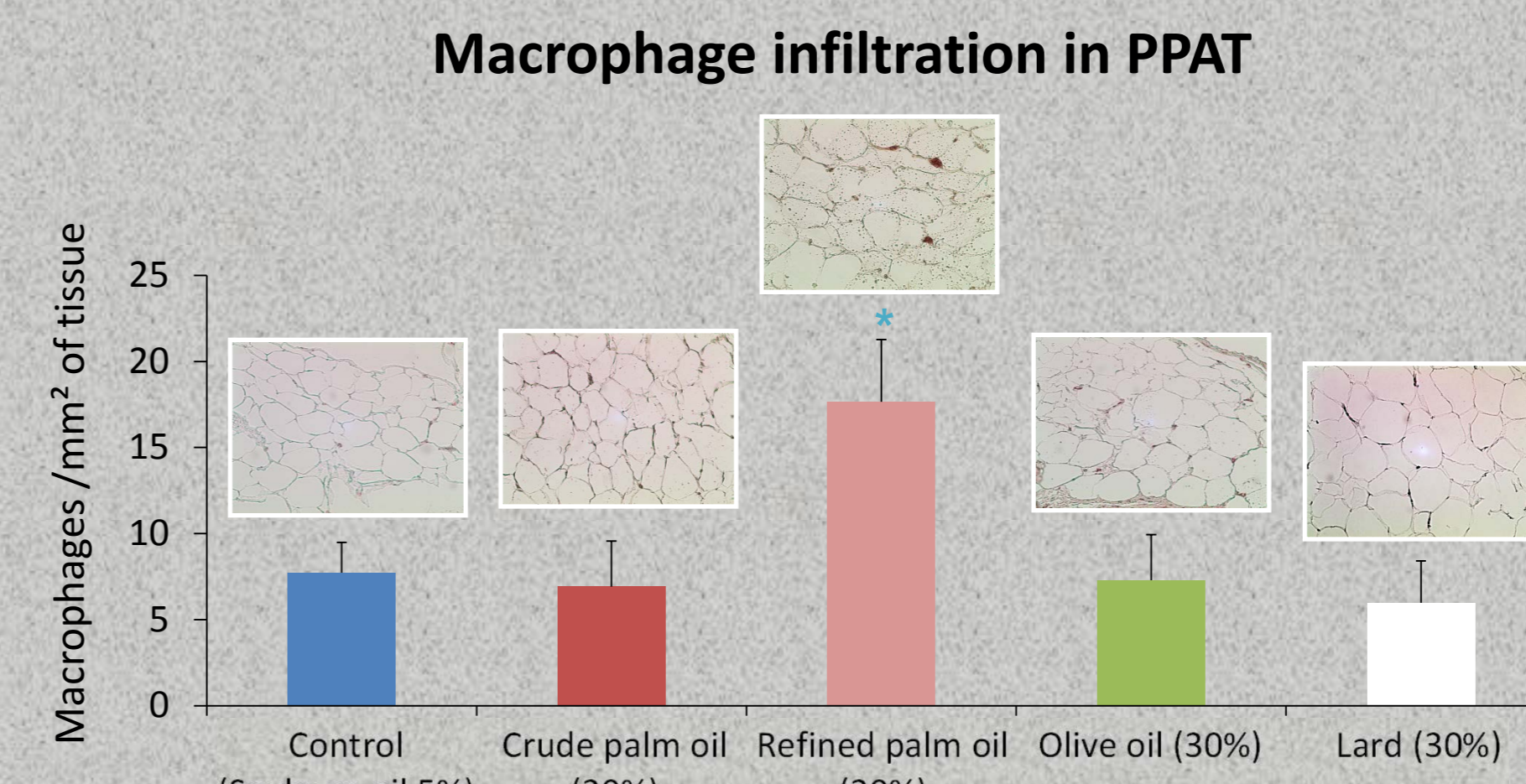
Peripancreatic (PPAT, white adipose tissue) and peri-aortic adipose tissue (PAAT, brown adipose tissue) are ectopic AT influencing the activity of adjacent organs. Palm oil, the most widely consumed vegetable oil in the world, contains 50% saturated fatty acids and is incriminated in cardiovascular risk. However, this oil could have a nutritional interest due to the presence of antioxidants.

This study aims to investigate the effects of over-consumption of crude or refined palm oil on peripancreatic and peri-aortic adipose deposits as compared to epididymal AT. These effects are compared to those of olive oil and lard.

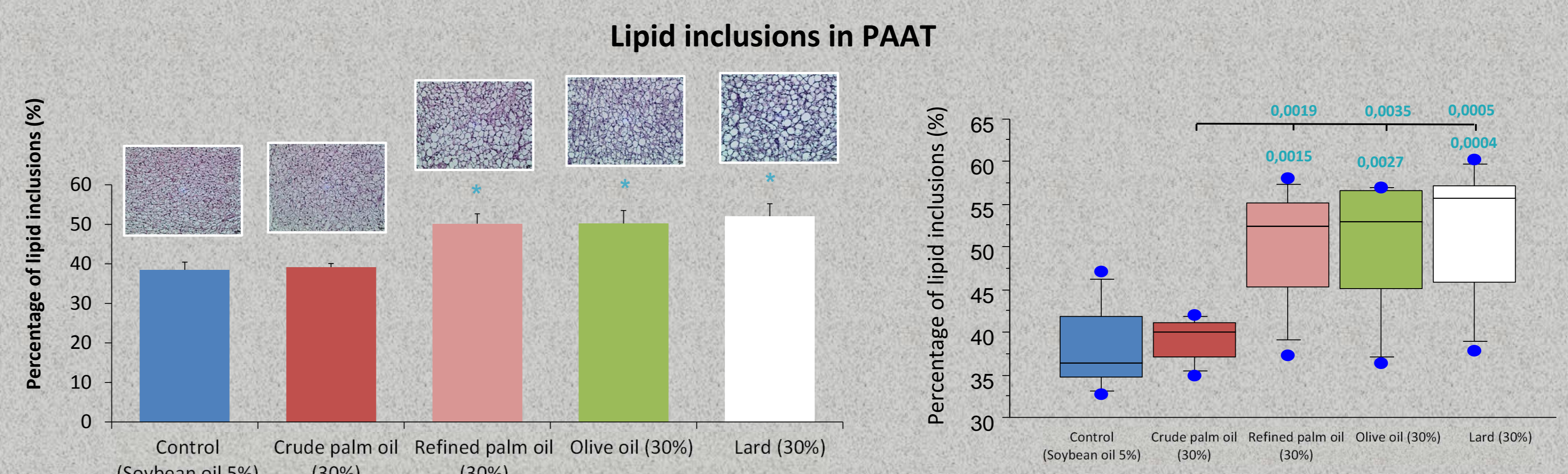
III- Adipocyte hypertrophy of Peri-Pancreatic adipose tissue (PPAT) in refined palm oil, olive oil and lard groups



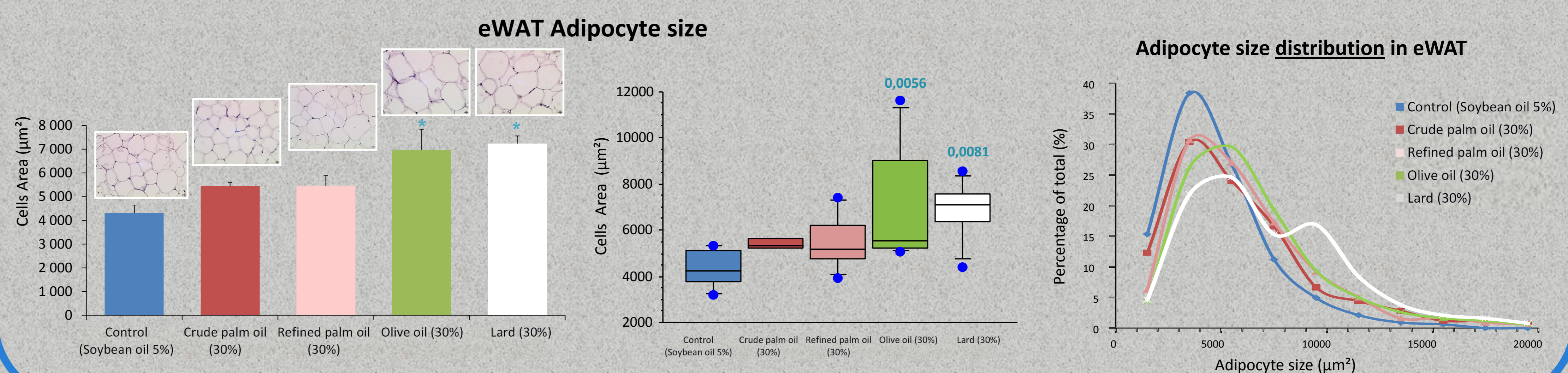
IV- Macrophage infiltration of PPAT in refined palm oil group (CD-68 labeling)



V- Increased presence of lipid inclusions in Peri-Aortic AT (PAAT) in refined palm oil, olive oil and lard groups



VI- Adipocyte hypertrophy in the Epididymal AT (eWAT) in the olive oil and lard groups



Conclusions

The four fat-enriched diets induce obesity and glucose metabolism disturbances. Adipocytes hypertrophy of white adipose tissues (PPAT and eWAT), and increased lipid inclusions in brown adipose tissue (PAAT), are lower with crude palm oil, compared to the other three diets. Infiltration of macrophages, a sign of inflammation, in peri-pancreatic adipose tissue is observed only with refined palm oil.

Over-consumption of crude palm oil seems less deleterious on adipose deposits suggesting the importance of antioxidants and vitamins lost during refining.