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5-AMINOLEVULINIC ACID-DERIVED PROTOPORPHYRIN IX MEDIATED FLUORESCENCE DIAGNOSIS AND PHOTODYNAMIC THERAPY OF MACROPHAGES WITHIN THE ATHEROSCLEROTIC PLAQUE

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Objectives To detect the accumulation of ALA-PpIX in the plaque macrophages and evaluate the effects of PDT on macrophages.

Methods The fluorescence of PpIX was detected by fluorescence microscope in THP-1 macrophages and plaque fresh-frozen sections of rabbit carotid artery. Immunofluorescent staining of plaque macrophages and SMCs was performed to locate ALA-PpIX. Plaque burden was evaluated by Haematoxylin and eosin (H&E) staining. Plaque macrophages and SMCs content was determined by immunohistochemical staining.

Results PpIX was found accumulated in the cytoplasm of THP-1 macrophages. In the plaque fresh-frozen sections, the fluorescence of ALA-PpIX was detected where macrophages immunofluorescence staining was positive. Compared with the control group, the plaque area was reduced by 59% $p<0.01$) at 4 week after PDT, the plaque macrophages content decreased by 56% $p<0.001$) at 1 week and 64% $p<0.001$) at 4 week respectively.

Conclusions ALA-PpIX is preferentially accumulated in the macrophages of plaque and ALA-PpIX mediated PDT significantly decreases macrophages content, indicating a promising strategy of atherosclerotic plaque macrophages diagnosis and therapy.

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