



MICRO- AND NANOPLASTICS: A NEW UNCONVENTIONAL RISK FACTOR FOR CARDIOVASCULAR HEALTH

Raffaele Marfella

Departments of Advanced Medical and Surgical Sciences, University of Naples, Italy

Micro- and nanoplastics (MNPs) are increasingly recognized as pervasive environmental contaminants with potential systemic biological effects. Beyond their well-known ecological impact, growing experimental and clinical evidence suggests that MNPs may act as non-conventional cardiovascular risk factors, contributing to chronic inflammation and vascular dysfunction. Recent human studies have demonstrated the presence of MNPs within atherosclerotic plaques, where their accumulation is associated with enhanced inflammatory activity, plaque instability, and adverse cardio-

vascular outcomes. Mechanistically, MNPs appear to promote oxidative stress, activation of innate immune pathways, and endothelial dysfunction, thereby amplifying established cardiometabolic risk factors rather than acting in isolation. This lecture will provide an overview of current evidence linking MNP exposure to cardiovascular disease, with particular focus on translational human data, pathophysiological mechanisms, and potential clinical implications. Finally, emerging perspectives on risk stratification and future preventive or therapeutic strategies targeting environmentally driven vascular inflammation will be discussed.