

EUROMAG MEETING 2011

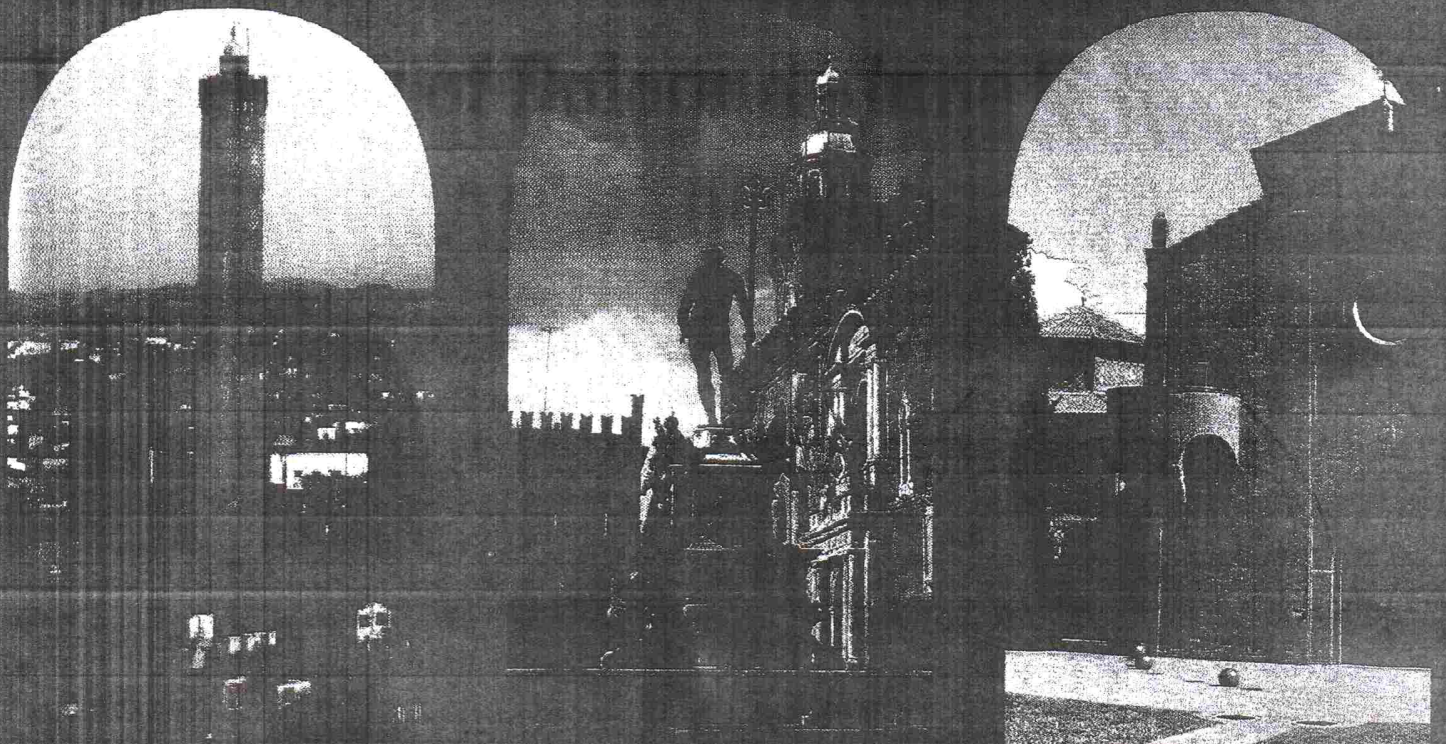


ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA



SDRM
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BIOLOGY OF MAGNESIUM AND ITS TRANSPORTERS: Implications In Human Diseases University of Bologna - June 8-10, 2011



Program and book of abstracts

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Magnesium in aging

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Aging is frequently associated with magnesium (Mg) deficit, which besides having a negative impact on the mitochondrial energy production pathways necessary to generate ATP also reduces the threshold antioxidant capacity of the aging organism. Mg itself acts as an antioxidant against oxidative mitochondria damage. Low-grade chronic inflammation and oxidative stress are intertwined mechanisms identified as pathogenic factors in the aging process per se and in various age-related diseases. Chronic Mg deficiency results in excessive production of oxygen-derived free radicals and low-grade inflammation. The total plasma concentrations of Mg are remarkably constant in healthy subjects at any age, however, total body Mg and intracellular Mg tend to decrease with age. The most common cause of Mg deficit in older persons is a low Mg intake, although secondary Mg deficit in aging may also results from diverse mechanisms, such as reduced Mg intestinal absorption, reduced Mg bone stores, and excessive urinary loss. Secondary Mg deficit may be linked to diverse disorders often present in older adults (i.e. insulin resistance and/or type 2 diabetes mellitus), and drugs (i.e. use of hypermagnesuric diuretics). Chronic Mg deficit has been associated with an increased risk of developing numerous preclinical and clinical age-related conditions, including hypertension, stroke, atherosclerosis, ischemic heart disease, cardiac arrhythmias, glucose intolerance, insulin resistance, type 2 diabetes mellitus, endothelial dysfunction, abnormal vascular remodeling, altered lipid metabolism, platelet aggregation/thrombosis, asthma, chronic fatigue, sarcopenia, as well as depression and other neuropsychiatric disorders. Mg deficit associated with aging may be at least one of the pathophysiological links helping to explain the interplay among inflammation/oxidative stress, the aging process and the age-related diseases.

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