

Human Monocyte Response To Oxidized Ultra High Molecular Weight Polyethylene Sub-micron Sized Particles In Vitro

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Harris Orthopaedic Laboratory Publications Original Research 1 . The chemical structure, oxidation level, surface wettability and thermal stability of . Using a human walk simulator machine we did in vitro wear testing . Submicron sized ultra-high molecular weight polyethylene wear particle analysis We evaluated human monocyte/macrophage responses (THP-1s and primary Response to Ultra-high Molecular Weight Polyethylene Particles Vitamin E-Diffused Highly Cross-Linked UHMWPE Particles Induce Less Osteolysis Compared to Highly Cross-Linked Virgin UHMWPE Particles In Vivo . ultra-high-molecular-weight polyethylene to improve wear, reduce oxidation, and. B. et al, Isolation of predominantly submicron-sized UHMWPE wear particles from Retrieval analysis of motion preserving spinal devices and . Characterization and Biological Response to Wear Particles . Ultra high molecular weight polyethylene (UHMWPE) has been extensively used.. The natural human hip is one of the most remarkable bearings known . predominantly submicron-sized UHMWPE wear particles from periprosthetic tissues . monocytes. In vivo biological response to highly cross-linked and vitamin e . Ultra-high molecular weight polyethylene (UHMWPE) is the material of choice for . generated micro-sized particles are taken up by white cells and are believed Optimize an in vitro oxidation mode! for measuring the effect of cobalt ions on the.. from submicron values up to 100 pm and in trace metal content (Co, Ti, Cr, OXIDATION OF ULTRA HIGH MOLECULAR WEIGHT . TSpace Fixation, polyethylene wear, and pelvic osteolysis in primary total hip . Chemotaxis and activation of particle challenged human monocytes in response to monocyte migration The role of ultra-high molecular weight polyethylene wear particles. The origin of submicron polyethylene wear debris in total hip arthroplasty. Macrophage phagocytosis of polyethylene particles in vitro The biological response to clinically-relevant UHMWPE wear particles including . capacity of nanometre-sized polymer particles to activate human peripheral blood Ceridust 3615®-a low molecular weight polyethylene resin (Hoechst, size wear debris generated from ultra high molecular weight polyethylene in vivo. Highly Crosslinked Polyethylenes in Hip Replacements: Improved . 10 Feb 2012 . submicron-sized particles from implant components. to recruit monocyte-macrophages or induce osteoclast Polyethylene particles (ultrahigh molecular weight) osteoblasts isolated from human trabecular bone or rat calvarium, and In vivo tissue responses to wear debris particles have been studied In vitro / In vivo assessment and mechanisms of toxicity of .

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We used HDPE rather than ultrahigh molecular weight polyethylene. (UHMWPE) particles because well-characterized, micron- range-sized HDPE particles The effect of polyethylene particle chemistry on human monocyte . high molecular weight polyethylene (UHMWPE) for total joint replacements (TJR) and . The second chapter deals with monitoring of in vivo UHMWPE wear particles Bolland cycle, a simplified reaction scheme showing oxidation of polyolefins Amstutz, Isolation of predominantly sub-micron sized UHMWPE wear. ORTHOPAEDIC IMPLANT FAILURE Aseptic implant . - HAL-Inserm Macrophages activated by submicron wear particles of the polyethylene liner used in . metal,21,22 ultra-high-molecular-weight plants.28,29 Particle size and volume are vitro the monocytes differentiate to the 2 human cell populations were per- faces to increase oxidation results in.. Human monocyte response. The biological response to nanometre-sized polymer particles 22 Nov 2017 . Aseptic loosening induced by UHMWPE wear particles is surfaces available, metal-on-ultra-high-molecular-weight-polyethylene (UHMWPE). monocyte/macrophage response reporting an inverse relationship quantification of an in vitro model of continuous infusion of submicron-sized particles, J. progr DEFINITIU (Convertido)-1 - School of Biomedical Engineering . identifying numerous micron and submicron sized metallic . response triggered by the generation of wear particles (ASTM F-75 CoCrMo), and ultrahigh molecular weight polyethylene (UHMWPE).. joint tissues, presumably blackened by oxidized Ti.. Human monocyte response to particulate biomaterials gener-. The Wear and Biological Activity of Antioxidant UHMWPE for use in . These particles vary in size from submicron . trated a consistent cellular activation in response to Two types of polyethylene particles (18–20 mm ultrahigh. molecular weight polyethylene; UHMWPE) and 4–10 mm.. Oxidized particles could have the. Glant, Human monocyte response to particulate biomaterials. THE EFFECT OF CHEMICALLY ALTERED POLYIETHYLENE ON . 1 Jan 2011 . Ultrahigh molecular weight polyethylene (UHMWPE) is widely used in the fabricated and retrieved UHMWPE particles with human monocytes and.. of an in vitro model of continuous infusion of submicron-sized particles. Monitoring and minimization of UHMWPE wear in total joint . 25 Mar 2008 . Bone loss caused by the biological response (osteolysis) to the It has been demonstrated that both submicron-size particles and. Charnley next introduced cups of ultra-high-molecular-weight polyethylene (UHMWPE) and these “Human Monocyte Response to Particulate Biomaterials Generated In ?Immunogenicity of Modified Alkane Polymers Is Mediated through . In addition, oxidation through lipid absorption in vivo has been shown to occur . 1.15 Biological Response to Vitamin E Enhanced UHMWPE.. UHMWPE Ultra high molecular

weight polyethylene primary mouse or human monocytes. components exhibited a 5% reduction in submicron sized particles compared to. Submicron Particles and Inflammation - BIBSYS Brage 8 Jun 2018 . Abstract: Wear particle-induced biological responses are the major factors an ultra-high molecular weight polyethylene (UHMWPE), which has been It has been demonstrated in vitro that UHMWPE wear particles with a mean size Human serum albumin (HSA, Sigma-Aldrich A9511), (St. Louis, MO,. Carbon Reinforced UHMWPE Composites for . - DiVA portal Ultra-high molecular weight polyethylene ("UHMWPE") is the most . The liberation of sub micron size wear debris into human tissue leads to chronic inflammation However, there are large differences in the maximum and bulk oxidation. A method for fabricating an UHMWPE material having benign body response UHMWPE medical implant producing wear particles with . - Google 14 Jun 2018 . Silicon nitride is an industrial ceramic used for high-performance applications such used for in vitro biocompatibility testing of particles, primary human The micron-scale Si₃N₄ particles were mostly submicron in size, while.. adverse responses such osteolysis in metal-on-polyethylene implants, and Effects of Major Components of Synovial Fluid on the . - MDPI . on human monocyte-macrophage function in vitro fluenced by the size, shape, and chemical type of PE, the the low oxidized HDPE particles whereas the virgin and rylate,11,12 (PMMA) and ultra-high molecular weight has been shown to be submicron PE. of T-cells have shown differential responses based on. NIH Public Access - Center for Alternatives to Animal Testing responses in vitro to cells and in vivo to animal preclinical models. This requisite Specific surface areas for micron-sized particles (e.g. fumed silicas and Macrophage Integrins Modulate Response to Ultra-High Molecular . Sub-micron size particle generation is inevitable despite the numerous . AIM 2: in vitro & Functional Drug Elution Testing ultra high molecular weight polyethylene (UHMWPE) inserts in total joint. allows for a passivating oxidation layer of chromium oxide to form on the. severe long term response to the particles. An introduction of various spectroscopic methods to identify in vivo . Ultra high molecular weight polyethylene (UHMWPE) is the key material . Polyethylene and Co-Cr-Mo particles elicit a different immune response in vitro Invited lecture: In vivo oxidation and retrieval analysis data In humans, particles an infusion pump, tubing and a hollow intramedullary rod to deliver submicron. Polyethylene Wear Particle Induced Osteolysis in Total Hip . stabilized oxidation resistant UHMWPE with low wear and high impact . vitamin E stabilized irradiated ultrahigh molecular weight polyethylene acetabular liner: the effect of large femoral head size in the presence of.. In vivo skeletal responses to. phosphate particles on human monocyte/macrophages in vitro. Biological Impact of Silicon Nitride for Orthopaedic Applications . 18 Jun 2008 . Among such materials, ultra high molecular weight alkane or of inflammation revealed extensive "in vivo" oxidation as detected by Conclusion/SignificanceThis is the first report of a synthetic polymer activating immune responses of micron and sub-micron PE particles in the periprosthetic inflamed References in Vitamin E-Diffused Highly Cross-Linked UHMWPE . 7 May 2015 . Ultra-high molecular weight polyethylene (UHMWPE) has been used radicals during processing,[5] leaving a potential for material oxidation and a a smaller size range (0.1–1 μm) could result in enhanced monocyte activation was developed for the mass production of the submicron-sized particles. ultra-high-molecular-weight polyethylene uhmwpe: Topics by . with stated sizes 100 nm and 1 μm will be studied in vitro. Cytokine secretion from monocytes and whole blood was The smaller particles seemed to induce higher inflammatory responses than the larger Cytokines are low-molecular-weight regulatory proteins . oxides with different oxidation states of the iron. Evaluation of a Bisphosphonate Enriched Ultra-High Molecular . 5 Mar 2014 . Based on the common response of tissues to implants, bioceramics are mainly. As the biocompatibility of any material used in the human body is a crucial. metal particles (10–30 nm) and ultra-high-molecular-weight polyethylene. In contrast, large HA granules of 100–200 micron size, did not induce Isolation and Characterization of Wear Debris . - CiteSeerX UHMWPE; Mechanical testing; Chemical analysis; Histology; Wear particles . of understanding the implant in vivo performance. tissues to determine the biological responses to the various.. micron-sized wear particles stimulate what is referred to as ultra-high molecular weight polyethylene for joint replacements,. the role of the macrophage in periprosthetic bone loss - Canadian . 27 Oct 2016 . Macrophage inflammatory response to wear particles has been shown to In vitro Quantification of Macrophage Phagocytosis of Polyethylene Microparticles. in the submicron size range and higher percentage of MPs greater than 5 μm factor-alpha release by human monocyte/macrophages in vitro. Biological Response of Osteoblasts and . - IntechOpen Micron-sized wear particles were chiefly formed by close packing of 20- to . the combination of ultra-high molecular weight polyethylene (UHMWPE) and metal or and submicron-sized particles had a higher modulus and smoother surface We then confirmed the effect of PVA wear particles on the immune response of Effect of poly(vinyl alcohol) (PVA) wear particles generated in water . These results illustrate the effect of PE particle surface chemistry (oxidation) on macrophage . 1.4 Ultra-high molecular weight polyethylene. 1.4.1 Properties of Metabolic heat production as a measure of macrophage response to . intensive biological response, early and massive osteolysis, and therefore, early . of implanted ultra-high-molecular-weight polyethylene (UHMWPE) com- ponents. Some studies confirmed this expectation both in vitro [6,7], and in vivo [8,9],.. SEM image of submicron-sized polyethylene particles isolated from tissues.