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First description of auto-antibodies to vascular endothelial cadherin in humans: Association with autoimmune diseases

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Patients with autoimmune diseases may present high risk of developing vascular cell dysfunction. To identify them, early biomarkers are required. VE-cadherin is an endothelial specific protein in charge of vascular integrity. This study was designed to detect and characterize circulating autoantibodies to VE-cadherin (AAVEs) in patients with early-stage autoimmune diseases. An enzyme-linked immunosorbent assay (ELISA) was developed to capture autoantibodies, using a recombinant human VE-cadherin fragment covering the extracellular domains as a target antigen. Basal AAVEs levels were determined for healthy donors (HD, n=75) and for patients (n=100) with various autoimmune diseases, including rheumatoid arthritis (n=23), systemic lupus erythematosus (SLE, n=31), systemic sclerosis (n=30), and Behçet's disease (BD, n=16) were also tested. Levels of AAVEs were significantly higher in rheumatoid arthritis ($P<0.0001$), SLE ($P<0.05$), and BD ($P<0.05$) patients as compared to HD. Epitope mapping of AAVEs from a BD patient, showed a specificity for the EC3 and EC4 domains of VE-cadherin, whereas SLE patients preferentially recognized the EC1 fragment. Purified IgG from BD patients was found to induce endothelial cell retraction, redistribution of VE-cadherin, and cause the formation of numerous intercellular gaps. Altogether, these data demonstrate a potential pathogenic effect of AAVEs isolated from patients. In addition, distinct epitopes of human VE-cadherin might be specific for distinct immune diseases. Because regions EC1 and EC3-4 have been shown to be involved in homophilic VE-cadherin interactions, AAVEs produced in the course of dysimmune diseases might be specific biomarkers for endothelial injury, which is a part of the early pathogenicity of these diseases.

Biography

Isabelle Y Vilgrain completed her PhD in 1985 (France) and is a full-time Research Scientist at the National Scientific Research Council of France (CNRS) since 1985. From 1981 to 1989, she was a pioneer in protein kinase C in endocrine tissues. She has been awarded by the Foundation pour la Recherche Médicale in 1987. In 1989, she moved to the Whittier Institute in San Diego (CA, USA) for two years. From 1992, she gradually turned from cell signalling and kinases toward in vivo models and vascular biology in oncology with applications in clinic. In 2006, she developed means for the detection of biomarkers in blood and has 3 patents in the field of in vitro diagnosis. Her current research is focused on the study of knock in mice and the identification of biomarkers in cancer, inflammatory and autoimmune diseases.

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Virulence gene markers and biofilm formation of *Aeromonas* species recovered from cow

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This study was carried out to assess the antibiotic susceptibility profiles of *Aeromonas* strains recovered from cow feces, and the virulence potentials of the isolates. *Aeromonas* isolates obtained in the study were found to show total resistance to novobiocin, oxacillin, clindamycin, ticarcillin and trimethoprim. Also *Aeromonas* strains demonstrated susceptibility against oxytetracycline, tobramycin and cefotaxime. *Aeromonas* strains from Lovedale farm were found to harbor virulence genes in the following proportion:- ast 35.7%, aer 71.4%, fla 60.7%, hlyA.25%, lip 35.7%. While isolates from Fort Cox farms were found to possess virulence markers in the following fraction:- ast 55.2%, fla 78.9%, alt 10.5%, aer 63.1%, hlyA 35.9%, lip 21%. Class 1 integron was present in 27.2% of isolates; blaTEM gene was detected in 34.8% of isolates while blaP1 class A β-lactamase gene was present in 12.1% of isolates. About 86% of the isolates formed biofilm on microtitre plates. The possession of multidrug-resistant determinants and virulence genes presence in *Aeromonas* isolates from cow feces reveals the pathogenic and infectious significance of these isolates and is of great significant to public health. The biofilm forming potential of the isolates may pose challenge during treatment of infection associated with *Aeromonas* species.

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