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Genistein Modified Polymer Blends for Hemodialysis Membranes[1] TENG CHANG, THEIN KYU, The University of Akron, LINDA DEFINE, THOMAS ALEXANDER, Summa Health System — A soybean-derived phytochemical called genistein was used as a modifying agent to polyether sulfone/polyvinyl pyrrolidone (PES/PVP) blends to produce multi-functional hemodialysis membranes. With the aid of phase diagrams of PES/PVP/genistein blends, asymmetric porous membranes were fabricated by coagulating in non-solvent. Both unmodified and genistein modified PES/PVP membranes were shown to be non-cytotoxic to the blood cells. Unmodified PES/PVP membranes were found to reduce reactive oxygen species (ROS) levels, whereas the genistein modified membranes exhibited suppression for ∼60% of the ROS levels. Also, the genistein modified membranes revealed significant suppression of proinflammatory cytokines: IL-1β, IL-6, and TNF-α. Moreover, addition of PVP to PES showed the reduced trend of platelet adhesion and then leveled off. However, the modified membranes exhibited suppression of platelet adhesion at low genistein loading, but beyond 15 wt%, the platelet adhesion level rised up.

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