Polysialic acid for the treatment of age-related macular degeneration and other neurodegenerative diseases

**Invention**
There is no satisfactory therapy to prevent the loss of synapses, axons or neurons in neurodegenerative diseases, such as age-related macular degeneration (AMD), multiple sclerosis and Alzheimer’s disease. Several studies demonstrate that this neuronal damage is partly mediated by proinflammatory cytokines and reactive oxygen species released by tissue macrophages and microglia.

The present invention allows preventing the production of proinflammatory cytokines and reactive oxygen species through the application of low molecular weight polysialic acid PSA-20. *In vitro* studies showed that PSA-20 prevents the activation of human macrophages and human microglia thereby inhibiting the production of cytotoxic proinflammatory cytokines and reactive oxygen species. It has been shown, that this anti-inflammatory effect is mediated through the human lineage specific receptor Siglec-11.

Furthermore, *in vivo* studies revealed that the administration of PSA-20 suppresses the activation of retinal microglia and the vascular leakage in an animal model of AMD and reduces the disease symptoms in an animal model of multiple sclerosis. Thus, PSA-20 represents an ideal candidate for the treatment of neurodegenerative diseases of the brain and retina.

**Commercial Opportunities**
The invention offers a novel approach for the prevention of inflammatory neuronal damage in the course of AMD or other neurodegenerative diseases.

**Current Status**
Inventors at the University Hospitals of Bonn and Cologne are seeking for a partnership for co-development of PSA-20 for the treatment of dry AMD. On behalf of the University Hospital Bonn and the University Cologne, PROvendis offers research collaboration with licensing option.

**Further Reading**


An invention of the University Hospital Bonn (UKBonn) and the University Cologne (UniKöln).

**Competitive Advantages**
- PSA-20 prevents:
  - the production of reactive oxygen species and of proinflammatory cytokines
  - the activation of microglia and the vascular leakage in an animal model of age-related macular degeneration
  - disease symptoms in an animal model of multiple sclerosis
- PSA-20 has a relative high therapeutic index on cultured human cells

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