

Purification of salmon clotting factors and their use as tissue sealants.

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Abstract:

Fibrin sealant prepared from the blood of farmed Atlantic salmon (*Salmo salar*) represents a potential source of well-controlled natural material with utility in a variety of clinical settings. A potential advantage of this material is a lower probability of viral or bacterial infection that has limited general approval of fibrin glues made from human or bovine proteins. This report describes the purification of fibrinogen from salmon blood, the use of fibrin glues derived from this material to promote wound healing in rats, and the antigenic response to this material. While the low ambient temperature of these cold water fish significantly lessens the probability of infectious transmission to humans, fibrinogen and factor XIII derived from *S. salar* are activated by human thrombin at 25degreeC and 37degreeC to form clots equivalent to those formed by human fibrin. We compare the reactivity of salmon and human fibrinogen with human and bovine thrombin and the structure and viscoelastic properties of the resulting fibrin gels over a range of pH and salt concentrations. The efficacy of salmon fibrin glues in a wound healing assay and the low antigenic response to salmon fibrinogen suggest that this material may substitute for proteins derived from mammalian sources with lower probability of infections. © 2000 Elsevier Science Ltd.