The Allergenicity of Gelatin

Summary of the Paper

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Gelatin does not exist as a natural protein but is derived from the hydrolysis of the insoluble connective tissue protein collagen, which exhibits no demonstrable antigenic effects. Gelatin has generally been considered as non-antigenic, but little attention has been paid to the antigenicity of the parent products as distinct from the hydrolyzed gelatin. Traces of contaminants may also be present which may elicit allergic symptoms. We included in this study the antigenic properties of bovine plasma, comminuted cooked ossein, crude gelatin solution derived from the comminuted ossein, as well as food grade gelatin and the most purified form, that used for intravenous injection.

These substances were tested and cross tested by the anaphylaxis method on guinea pigs.

From these experiments we concluded: Gelatin is non-ana-phylactogenic.

The antigenicity attributed to gelatin is related to a contamination by some blood elements of the species from which the gelatin is derived. This antigenic element is present in both the plasma and serum and apparently is highly resistant to heat.

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The presence of blood contaminants in comminuted ossein was demonstrated by the majority (56%) of tests on animals sensitized to this precursor of refined gelatin. It was found to a negligible degree (6.6%) in sensitization tests with the food grade gelatin. It was completely eliminated in the intravenous grade gelatin (Knox).

The blood contaminant in the comminuted ossein and the food grade gelatin was present in so minute an amount that it did not induce any anaphylactic response in animals sensitized to the whole plasma.

Because no authentic case of gelatin sensitization has been demonstrated in man, we were unable to obtain gelatin antibody-containing blood for human studies. We therefore must assume that because it is non-anaphylactogenic for the animal, it must be non-allergenic for man.

Any allergenicity that might be attributed to gelatin is due to contamination with blood elements of the species from which it is derived and not to antigenicity of the gelatin itself.