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# Serum Opacity Factor of *Staphylococcus epidermidis*

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Three *Staphylococcus epidermidis* strains produced a factor giving rise to opacity in different sera but not in albumin. Serum opacity factor was resistant to age and heat and active in acidic media.

Three strains (laboratory numbers 612NS, 618NS, and 725NS) of beta-hemolytic staphylococci isolated from the skin area behind the ear of apparently healthy children were coagulase negative (1) and formed acid from glucose, lactose, sucrose, and late from mannitol. An overnight staphylococcal culture on Todd-Hewitt broth (4) was centrifuged, and 0.5 ml of the supernatant gave rise to marked opacity when added to 3 ml of horse, pig, or human serum or horse pseudoglobulin (2) incubated at 37°C overnight.

The optical density of the mixture was measured at a wavelength of 475 nm in a Beckman spectrophotometer. No opacity was observed when the supernatant was added to human or bovine albumin.

The recent prestaining technique of McDonald and Bermes (3) for paper electrophoresis was employed for lipoprotein analysis of horse serum and pseudoglobulin before and after incubation with serum optical factor (SOF) and showed a marked decrease in alpha-lipoprotein (Table 1).

TABLE 1. *Analysis of serum and pseudoglobulin before and after adding SOF*

| Material | Alpha-LP[a] | Beta-LP[a] | Chylomicrons[a] |
|---|---|---|---|
| Horse serum | 31 | 29 | 40 |
| Horse serum + SOF | 15.5 | 41.2 | 43.3 |
| Pseudoglobulin | 23 | 54 | 23 |
| Pseudoglobulin + SOF | 13 | 63.3 | 23.3 |

[a] Percentage of total lipoprotein (LP).

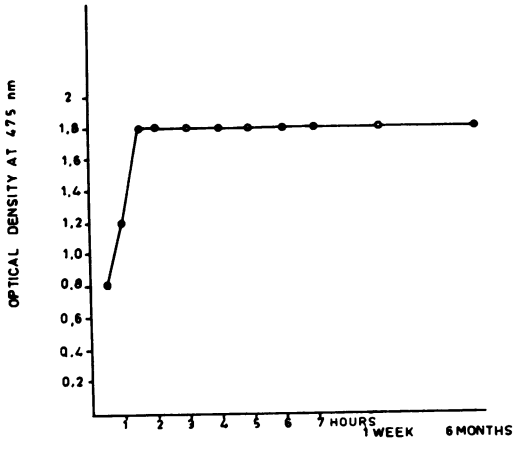


FIG. 1. *Effect of age on SOF activity.*

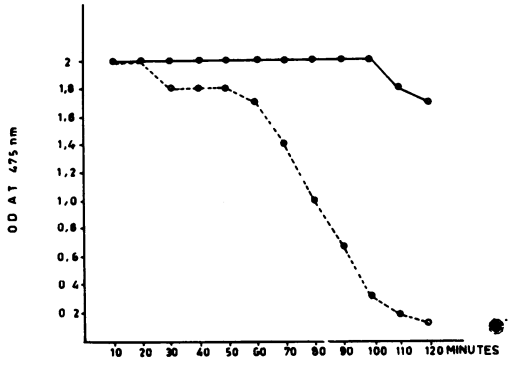


FIG. 2. *Effect of heat on SOF activity. Symbols: O——O, heated at 60°C; O----O, heated at 100°C.*

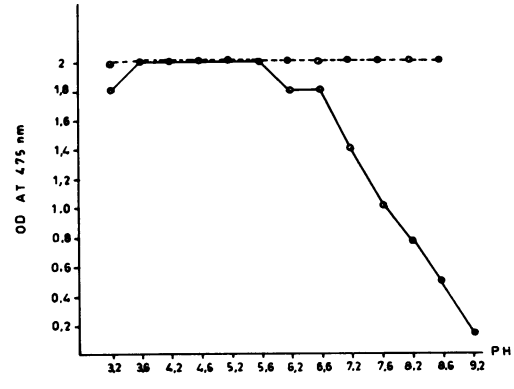


FIG. 3. *Effect of pH on SOF activity. Symbols: O----O, incubated with buffers for 1 h; O——O, incubated with buffers for 24 h.*

The three staphylococcal strains secreted SOF 0.5 h after cultivation and reached their maximum activity at 1.5 h, and this level was sustained for more than 6 months (Fig. 1).

Heating crude strain 618NS SOF adjusted to pH 5.6 at 60°C for 2 h or at 100°C for 30 min had no effect on its activity, but with longer periods of incubation at 100°C it began to lose activity (Fig. 2).

Crude strain 618NS SOF was adjusted to a pH range of 3.2 to 9.2, and two similar sets of tubes were prepared. One set was kept for 1 h at 4°C, the other was kept at 4°C for 24 h, and then both were tested for SOF. SOF was found to be active at a pH range of 3 to 6.2 and then lose activity at higher pH values; this loss occurred only after 24 h of incubation at 4°C (Fig. 3).

We plan to conduct further studies to fractionate and purify SOF and to determine its pathogenicity and antigenicity and whether there is any relationship between these *S. epidermidis* strains employed and various *S. pyogenes* strains and/or their SOFs.

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