COMPARISON OF DIFFERENT LIQUID CELL CULTURE MEDIA FOR CULTURING *NEISSERIA MENINGITIDIS*.

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OBJECTIVE: To compare and evaluate different liquid media for culturing *Neisseria meningitidis* (meningococci).

DESIGN: Strains of *N. meningitidis* were grown in different cell culture media under different conditions (e.g. with or without iron source; with or without serum source). As serum source fetal calf serum (FCS) was used to avoid the presence of anti meningococcal antibodies. Growth rate was determined in 30 min intervals for the first six hours and than in longer intervals until 48 h of culture were completed. Optical density (OD) of the culture media were measured (λ=600 nm). Following 24 h of incubation 10^4 viable meningococci were used in a whole blood model of infection. The bacterial survival and cytokine release from leukocytes were compared to results obtained by using meningococci grown on GC agar.

RESULTS: Growth rate was different in various cell culture media. The OD_{600} for 10^6 meningococci/mL was higher for those meningococci grown in liquid media than for those grown on solid media. Most interestingly, when grown in standard cell culture medium (RPMI 1640; Gibco BRL, Paisley, UK) without iron in the medium but supplemented with 10% FCS meningococci grew to a logarithmic growth phase within the first six to eight hours. Between 8 and 24 h of culture we observed an equilibrium phase or a decrease in *cfu*. The behavior of those meningococci was significantly different in a whole blood model when compared to meningococci grown on GC agar. If, for instance, serogroup B meningococci were grown under iron starvation, they were rapidly killed in human whole blood whereas those grown on GC showed logarithmic growth.

CONCLUSIONS: There are considerable differences concerning the growth rate of meningococci and subsequent behavior in a whole blood model of infection depending on the culture medium and the culture conditions used. This should be taken into account when meningococci are used for the study of pathogenicity or host—pathogen interactions.