SIALOGLYCOPROTEINS OF EJACULATED HUMAN SPERMATOZOA AND SEMINAL PLASMA

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A THESIS SUBMITTED IN PARTIAL FULLFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE
(BIOCHEMISTRY)

IN THE

FACULTY OF GRADUATE STUDIES
MAHIDOL UNIVERSITY

1983

Abstract

In the human ejaculate, sialic acids are present as both free and bound form (sialoglycoproteins and sialoglycolipids). The bound form is also found associated with sperm. Studies on the sialoglycoproteins of sperm and fluid of male reproductive system have been carried out in other animals, but not in human . We report here the identification of sialoglycoproteins on human ejaculated sperm and liquefied seminal plasma using periodate-tritiated borohydride labelling technqiue and sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE).

At least 9 species of sperm sialoglycoproteins were identified (M_r 78K to 12K). Only those species of M_r 12K-17K, 18K-20K and 30K-37K were intensely labelled and classified as the major sialoglycoproteins of human sperm. The rest were of minor species. Sialoglycoproteins of human ejaculated sperm were resistant to the action of neuraminidase (*Vibrio cholerae*).

Normal liquefied seminal plasma possessed 5 species of sialoglycoproteins whereas seminal plasma samples obtained from vasectomized donors contained 9 species. The major species in the normal samples was of M_r 12K-17K while those of vasectomized samples were the unique species of M_r 18K-20K and the less-frequently found species of M_r 12K-17K. All species of normal seminal plasma sialoglycoproteins were partially sensitive to neuraminidase. Some variation among individuals in seminal plasma proteins and sialoglycoproteins from both normal and vasectomized donors was also observed. Seminal plasma samples in which proteolysis was

retarded by 0.1 M Tris-acetate buffer, pH 4, consisted mainly of three major sialoglycoproteins (M_r 73K, 58K and 19K) and two minor species of M_r 26K and 42K. These may be precursors to be degraded during liquefaction to yield those sialoglycoproteins found in the liquefied seminal plasma.

By using either gel filtration (Sephadex G-100) or ultracentrifugation, normal liquefied seminal plasma was fractionated and a fraction consisting of large protein complex was prepared. In this fraction, an enrichment of large sialoglycoproteins (M_r 68K, 70K, 74K and 88K) with some small species (M_r 13K and 18K) was achieved.

The sialoglycoproteins of human sperm and seminal plasma were found to be more comparable to those of rat cauda epididymal sperm and epididymal fluid respectively. On the basis of molecular weights and comparison with sialoglycoproteins of other animals, certain human sialoglycoproteins were tentatively identified as forward-motility protein, α-lactalbumin and fibronectin.