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JOURNAL ARTICLE

Effect of fucoidin on human sperm-zona pellucida interactions

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The authors recently reported that fucoidin (a polymer of predominantly L-fucose sulfate) produced a strong, significant, and dose-dependent inhibition of sperm-zona binding under hemizona assay conditions. The current studies were designed to evaluate the mechanisms underlying this inhibitory activity. Using computerized semen analysis, the monoclonal anti-sperm antibody T-6 and indirect immunofluorescence technique, and the fura-2 indicator, no significant impact of fucoidin on sperm motion parameters, on the spontaneous acrosome reaction, or its prerequisite, the increase in calcium influx, were observed. Subsequently, a mild acid hydrolysis of the fucoidin molecule was performed, followed by sizing hydrolysates in a Biogel P2 column and separating fractions (n = 6). All fucoidin fragments significantly inhibited tight binding of human sperm to human zona pellucida under hemizona assay conditions (range, 56%-94%) when tested individually. These results provide further evidence that the effect of fucoidin is produced by a receptor-ligand association.

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