ABELMOSCHUS ESCULENTUS (OKRA) MUCILAGE AS A SUBSTITUTE FOR CERVICAL MUCUS

Anthony E. Archibong¹, Elochukwu J. Ezekakpu¹, G. William Bates² and Melanie Freeman³

¹Departments of Physiology, Obstetrics & ²Gynecology, Meharry Medical College, 1005 D.B. Todd Blvd, Nashville, TN, USA.
³Nashville Fertility Center, 345 23rd Ave N. Suite 401, Nashville, TN, USA.

Abstract: The in-vitro sperm–mucus penetration test (SMPT) is a sperm function test which measures the ability of sperm in the semen to swim up into a column of cervical mucus or substitute. If it can be proven to be as good as semen analysis in assessing progressive sperm motility, then arguably, its additional benefit as a test of functional competence may make it a suitable and cheaper alternative to the present combination of semen analysis and sperm separation procedures. This attraction has led to the re-emergence of research into SMPT for the assessment of semen. Our research is focused on the ability of the mucilage from Abelmoschus esculentus (okra), to serve as a cervical mucus substitute. Abelmoschus esculentus belongs in the Malvaceae family and thought to have come from Africa, where it has been grown as a crop for centuries. This cultigen that has not always received the attention it deserves, is effective for: preventing diabetes; boosting digestive health; weight management; promoting a healthy pregnancy; maintaining healthy skin; protecting against free radical damage. The objective of this study was to determine the effectiveness of okra mucilage to serve as a substitute for cervical mucus collected during the fertile phase of the menstrual cycle. Frozen extracted okra mucilage was used with freshly ejaculated semen samples that meet WHO requirement for normal ejaculate, in a capillary tube test for sperm-cervical mucus interaction. The okra mucilage exhibited the same spinnbarkeit and ferning patterns as cervical mucus harvested during the fertile phase of the menstrual cycle. Furthermore, it permitted a significant number of spermatozoa (>25 spermatozoa under 400X magnification) to penetrate the mucilage and travel approximately 45mm within one hour of initiation of interaction with semen. The grade and percentage progressive motility of okra mucilage-penetrated spermatozoa were 3.5-4.0 and 86.8%, respectively compared with those of their corresponding semen samples (2.5-3.0, 47.7%, respectively). These data suggest that extracted okra mucilage can substitute for cervical mucus for testing sperm function based on their ability to penetrate this plant’s mucus.

Key Words: Okra Mucus, Cervical Mucus, Mucus Penetration, Semen, Human Spermatozoa.

Acknowledgement: This research was supported by NIH grant numbers: U54MD0007593.