G10 Effect of Toilet Detergent on Morphological Change of Spermatozoa

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After attending this presentation, attendees will be able to identify and appreciate the morphological changes that occur to spermatozoa when exposed to toilet detergent.

This presentation will impact the forensic community and/or humanity by showing how toilet detergent can affect changes in spermatozoa, helping the criminalist determine the length of spermatozoa exposure to the detergent, and providing further assistance in identifying perpetrators of sexual assault.

Human semen is an important specimen in forensic casework. A girl was killed at her own home and found approximately ten days after death. Five persons were suspected as the killer. A condom containing human semen and filled with toilet detergent was found in the toilet chamber pot. Results of DNA identification matched the specimen to one of the suspects. However, the problem was to determine the time when the semen was discarded. For this reason, the following experiment was designed and performed. Human semen samples were collected from fifteen healthy volunteers, and the samples were confirmed to be normal by routine semen examination. The semen samples were mixed in two concentrations of the toilet detergent (0.2 mg/ml and 0.02 mg/ml), or in water as control. All preparations were kept at room temperature and were examined periodically under a microscope. The Oppitz method was used for spermatozoa staining. In the first five days, no definite change in shape of spermatozoa was observed in all the samples. The major change of spermatozoa was separation of the tail and the head, which was clearly observed after ten days under 400 × magnifications. In samples mixed with 0.2 mg/ml solution of toilet detergent, dissociation of the tail and head was observed in approximately 40% of the spermatozoa by ten days, 80% by twenty days, and 98% by thirty days. When mixed with 0.02 mg/ml of toilet detergent, the corresponding proportions were approximately 40%, 70% and 95%, respectively. In the water control, only 25% showed separation by 10 days, and the percentage by 20 and 30 days was similar to 0.02 mg/ml detergent. Increase in bacteria was observed after 20 days. However, when magnification was increased from 400 to 800, approximately 70% of the spermatozoa in toilet detergent solution were found to possess a tail up to 30 days, whereas very few spermatozoa in the water control maintained a tail. The authors find is that after immersed in toilet detergent for a long time, many spermatozoa maintain the head and tail, but the tail becomes thinner and shorter.

Spermatozoa, Toilet Detergent, Morphological Change

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