

Correspondence

Endodontics as a Dental Identification

Sir:

I would like to call attention to an article I wrote and recently published in the *Australian Endodontic Newsletter*, Vol. 22, No. 3, December 1996, pp. 9–12 titled "Endodontics—A Key to Identification in Forensic Dentistry: Report of a Case." As far as I can determine, this was the first time a burn victim was identified via a root in which endodontics was found in the charred remains of the victim. A brief history of the case is as follows. In 1965 a 31 year old male had an upper right lateral incisor treated endodontically with gutta percha and Kerr sealer. Four years later he was killed in a very devastating fire. A root was discovered in the ashes. The substance in the canal was a whitish ash which was radiopaque when radiographed. Other remains which were found were a small portion of the upper anterior maxilla with two roots remaining and a small piece of upper right maxilla with remnants of two molar teeth. An experiment was performed where by an extracted anterior tooth was filled with gutta percha and Kerr's root canal sealer, placed in an oven at 1,000°F for 3 h. When the remains of this tooth was examined radiographically, it compared very favorable to the root of the burn victim. The case involved a coroner's inquest because of a large amount of insurance money. I would be happy to send reprints of this article on request.

Manuel I. Weisman
1519 Laney-Walker Blvd., Suite B
Augusta, Georgia 30904-5827

High Levels of α -Amylase in Seminal Fluid may Represent a Simple Artifact in the Collection Process

Sir:

During the development of a combined amylase assay/DNA extraction protocol, we determined amylase activities in various body fluids from 60 healthy volunteers. In some semen samples we observed unusual high levels of amylase (up to 7730 U/L).

Semen samples usually show low levels of amylase activity, with an average of <100 U/L (1–7). Our observed levels of amylase are in accordance with the literature in which high levels of amylase in seminal fluid have been reported repeatedly (Kipps and Whitehead up to 13,000 U/L (1); Moon and Bunge up to 1434 U/L (2); Auvdel up to 6820 U/L (6); and Blake up to 50 times greater than the normal range (7)). Kipps and Whitehead ruled out the possibility that high amylase levels are related to bacterial contamination (1). With the exception of Blake, who postulated that the high activity resulted from saliva contamination, each publication failed to note the explanation for the occasionally very high levels of amylase found in semen. In two

cases, Blake observed, that the elevated isozymes were indicative of the Amy₁ locus (salivary locus). Upon testing additional samples from the same individuals, the isozymes reflected the normal Amy₂ pattern (pancreatic locus) and the activities were in the normal range (7).

In order to further investigate our observations, semen samples were obtained from ten healthy volunteers (three samples from each individual with an interval of 24 h, total 30 samples). The first sample was obtained by masturbation without the use of any saliva for lubrication during masturbation. The second sample was obtained by masturbation with the use of some saliva, and the third sample was obtained by masturbation with the use of large amounts of saliva for lubrication. The activity of amylase of the whole ejaculate was determined 1–3 h after collection using the α -Amylase Uni-Kit I Roche.

From the 10 individuals the semen samples obtained by masturbation without the use of any saliva for lubrication showed amylase levels ranging from 6–82 U/L. The samples that were obtained by masturbation from the same individuals with the use of some saliva showed amylase levels ranging from 145–910 U/L, and the samples that were obtained by masturbation from the same individuals with the use of large amounts of saliva for lubrication showed amylase levels of 264–7730 U/L.

Our results support the observation that saliva, if used for lubrication during masturbation, yields moderate to excessive high levels of α -amylase in semen samples. Given an average ejaculate volume of 3.5 mL, the addition of 1% saliva (35 μ L) with an activity of 100,000 U/L, or 0.1% saliva (3.5 μ L) with an activity of 1,000,000 U/L would be sufficient to raise the amylase level determined in seminal fluid from 100 U/L to >1000 U/L.

Therefore high levels of α -amylase in seminal fluid, as reported repeatedly in the literature, may represent a simple artifact in the collection process. This fact should be considered by forensic scientists when referring to reference amylase levels in seminal fluid.

References

1. Kipps AE, Whitehead PH. The significance of amylase in forensic investigations of body fluids. *Forensic Sci* 1975;6:137–44.
2. Moon KH, Bunge RG. Observations on the biochemistry of human semen, III amylase. *Fertility and Sterility* 1968;19:977–81.
3. Povoia H. Amylase in human semen. *J Urol* 1963;89:260–1.
4. Jade VH, Abhyankar HN. Human seminal amylase. *Indian J Exp Biol* 1979;17:417.
5. Nag Das SK, Bhattacharyya A. Enzyme activities in the seminal plasma of normospermic, oligospermic, and infertile azoospermic men. *Enzyme* 1984;32:157–61.
6. Auvdel MJ. Amylase levels in semen and saliva stains. *J Forensic Sci* 1986;31:426–31.
7. Blake ET. Genetic markers in human semen. Doctoral dissertation, University of California, Berkeley, 1976; available from University Microfilms International, No. 77-15,567, Ann Arbor MI.

Manfred N. Hochmeister, M.D.
 Petra Schlatter, M.D.
 Oskar Rudin
 Richard Dirnhofer, M.D.
 Institute of Legal Medicine
 Buehlstrasse 20, CH-3012
 Bern, Switzerland

Proficiency Testing—A Suggestion

Sir:

It is my experience that forensic examiners do not like proficiency testing. I believe this is in part due to the fact that there are too many different aims, levels of difficulty, and expectations that fall under the term "Proficiency Testing."

The level of difficulty of proficiency tests varies from test to test. Some manufacturers of the tests make tests extremely difficult, to the point that no one could be expected to get a complete answer. Other tests are exemplars which represent the day-to-day exemplars received in the laboratory. Still others may be made so easy that everyone should get the correct and complete answer. In many tests there is an expectation on the part of those taking the test that the test contains a "trick" and once the trick is known, one can successfully complete the test. There are also different types of tests, such as known or declared tests and those which are blind or undeclared tests.

Proficiency tests are also used to test totally different things in different settings, and by different parties. Management may want to determine if their laboratory staff is staying current with the "cutting edge" of their fields or to test the total laboratory system for compliance with correct procedures and acceptable timelines. Further, they may need these tests as an ingredient in laboratory

accreditation. Supervisors may want to test individual procedures or individuals, or use them as learning tools for their examiners. Individual examiners may want to use the known samples in proficiency tests as tests of their own procedures and capabilities. Outside the laboratory setting, we find others interested in using the proficiency tests for their own purposes. An example of this would be attorneys who want to use the tests to show, depending on their contention in the case, that the laboratory, procedure, examiner, etc. are either adequate and correct or inadequate and incorrect.

It is my opinion that the word "proficiency" in the term "Proficiency Test," has become so stretched as to have become almost a misnomer. It is now so broad that it has lost any true meaning in this context, and may have a totally unwarranted and prejudicial character in some tests where the laboratory or examiner is judged by an ineffect, inappropriate, or implied standard. They may thus be declared non-proficient when in fact they are proficient.

I would suggest that we drop the term "proficiency" and just call them "tests." Each test, group of tests, or supplier of tests should include a written statement of purpose which defines the test's aims, level of difficulty, expectations, and targets. This procedure would allow for a proper and unprejudiced evaluation of the test, its results, and those tested. It would also, in my opinion, help take away some of the reticence to participation in these tests, which is felt by those being tested.

The above represents the personal opinions of the author and in no way should be construed to represent the opinions of his employer.

Aziel Gorski, Head
 Fibers and Polymers Laboratory
 Division of Identification and Forensic Science
 Israel National Police
 Jerusalem, Israel