

LETTER TO THE EDITOR

PRESENCE OF GOLD IN SEMEN

Sir,

(Received on December, 1, 1990)

Kothari and Jain (1990) in their recent review in this Journal (1) have expressed some doubts about the presence of gold in semen as reported by us earlier (3). We feel detection of gold in semen is not an artefact because:

1. Subjects and patients who had undergone treatment with any gold preparation were excluded from the studies. While collecting the semen samples they were not permitted to wear any type of gold ornaments. The investigators also refrained from wearing gold ornaments during the period of study.
2. Gold was detected in human semen by using Mass Emission Spectroscopy. The sources of entry were traced to be the caput epididymis and testis (8). However, the metal was not seen with Direct Couple Plasma Emission Spectroscopy, perhaps due to lack of sensitivity (10).
3. Its presence in normal and different pathological human seminal plasma was demonstrated (3). The observations were confirmed by Energy Dispersive X-Ray facilities on Electron Microscope (unpublished data). Histochemical techniques in rats supported this (12).
4. Gold was estimated by employing Neutron Activation Analysis (4) and Atomic Absorption Spectrophotometry (11).
5. X Ray Diffraction Analysis showed gold containing metal complex in human semen and in tissues of genital system (6).
6. We have established Atomic Absorption Spectrophotometry as the most suitable method for estimation of gold in semen. For this, some samples were estimated by using Neutron Activation, Polarography and Atomic Absorption Spectrophotometry (7).

Gold is present in sea water where life originated. So its presence in present forms of life is not surprising. The total amount of gold present in an adult human body is $< 1\text{mg}$ (2). This amount is more than what is present in same weight of sea water (13). We also know that certain substances are more concentrated in semen than in blood. The metal zinc is the best example (LK Kothari, personal communication; 5,9). The gold may be entering the semen through caput epididymis and testis as supported by our studies employing mass emission spectroscopy (8) and histochemistry techniques (12). In the latter studies, gold was not detected in vital organs, but was seen in kidney and liver only after the treatment with gold.

In Ayurveda, different preparations of gold are available for a number of ailments. "Suwarna Bhasma" (gold ash) is advocated for male infertile patients. This may be useful for improving the quality of semen. A detailed study on gold in semen employing the treatment of gold preparations may reveal hidden facts on the role of this metal in male genital system.

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REFERENCES

1. Kothari LK, Jain M. Indian contribution to reproductive physiology: the last 2 decades. *Ind J Physiol Pharmacol* 1990; 34:73.
2. Oser BL (editor) "Hawk's Physiological Chemistry", McGraw Hill Book Company, New York, 1975, P.561.
3. Skandhan KP. Gold in normal and pathological human seminal plasma. *Israel J Med Sci* 1981a; 17:769.
4. Skandhan KP. Gold in human semen. *Andrologia* 1981b; 13:78.
5. Skandhan KP. Zinc in normal human seminal plasma. *Andrologia* 1981c; 13:346.
6. Skandhan KP. X ray diffraction analysis: human semen and genital tract. 1991a (Communicated).
7. Skandhan KP. Establishment of a suitable method for estimation of gold in semen. 1991b (Communicated).
8. Skandhan KP, Abraham KC. Presence of several elements in seminal plasma of normal and of different pathological conditions. *Andrologia* 1984; 16:587.
9. Skandhan KP, Mazumdar BN. Zinc and copper in normal and pathological seminal plasma: an analytical study. *Urologia* 1986; 53:200.
10. Skandhan KP, Pandya CB. Direct coule plasma emission spectroscopic study on human seminal plasma. *Adv Contra Dely Syst* 1986; 2:256.
11. Skandhan KP, Skandhan S, Mehta YB, Roy PB. Level of gold in normal and pathological semen. *J Gynecol Obstet Biol Reprod* 1991a (In press)
12. Skandhan KP, Skandhan S, Mehta YB, Roy PB. Histological demonstration of gold in male genital system of rat 1991b (Communicated).
13. Spector WS (editor) "Handbook of Biological Data", W.B. Saunder's Company, Philadelphia, 1956, P. 524.