Letters to the Editor

Human blastocyst development media

Dear Sir,

I am writing to express certain concerns regarding the paper by Devreker et al. (Devreker et al., 2001). While the first is only a minor point, the authors identified the commercial medium ‘K-SCIM’ (actually, K-SICM for Sydney IVF Cleavage Medium) as being manufactured by Sydney IVF in Queensland, rather than noting that the medium was developed at Sydney IVF (located, not surprisingly, in Sydney, New South Wales) but manufactured by Cook IVF, who are located in Queensland. More significantly, the origins of this culture medium were gravely misrepresented when the authors stated that it was based upon Quinn’s ‘Human Tubal Fluid’ (HTF) medium (Quinn et al., 1985), which is totally incorrect. In fact, I developed the sequential media now being sold by Cook IVF during the period 1991–1997 while working at Sydney IVF, under the sobriquet ‘M91’ (since the original formulations were created in 1991), and have always stated that the basal salts composition was based upon my own ‘Synthetic Tubal Fluid’ (STF) medium (Mortimer, 1986) which was originally developed between 1982–1985, totally independently of Quinn’s work. Indeed, in November 1985 I presented a seminar on my STF work in the department in Adelaide where Patrick Quinn was then working, after which he showed me the proofs of his Fertility and Sterility paper describing HTF (Quin et al., 1985). STF medium was formulated completely from scratch based upon the then current body of literature on oviductal fluid; its basal salts composition was later used during the formulation of my M91 media which, after 6 years of development and refinement, were licensed by Sydney IVF to Cook IVF for worldwide commercialization. Although my personal involvement with these media ceased when I left Sydney IVF in September 1999, and I derive no financial reward from them, it is, nonetheless, a source of dismay when one’s work is attributed to another. Due to the extremely long development time of the M91 family of media in an evolving clinical IVF programme, full publication of the research programme in peer-reviewed journals has not been possible. However, many of the early reports on M91’s development (Mortimer et al., 1998a,b,c) have been widely circulated by Cook IVF to groups involved in trials of the Cook Sydney IVF Media.

Unfortunately, the design of the study reported by Devreker et al. insofar as it concerns the Cook Sydney IVF media must be considered fundamentally flawed (Devreker et al., 2001). They state that embryos were cultured in cleavage medium until day 4, when they were transferred into the ‘second step’ medium for blastocyst development until day 6. The Cook Sydney IVF media were designed to provide optimum support for cleavage development only until day 3, when embryos destined for extended culture should be transferred into the Blastocyst Medium. This Blastocyst Medium supports excellent blastocyst development by day 5—rather than day 6, which should be considered sub-optimum development (Bavister, 1995). Furthermore, the Sydney IVF family of media were designed to be used as a total sequential system, i.e. from the moment that oocytes are removed from follicular fluid and spermatozoa are removed from seminal plasma. Because Gardner and Lane demonstrated that early embryos exposed to media devoid of non-essential amino acids had compromised ability to develop to blastocysts (Gardner and Lane, 1996), the Sydney IVF ‘Follicle Flushing Buffer’, ‘Oocyte Wash Buffer’ and ‘Fertilization Medium’ that were designed for handling oocytes and performing IVF, all contain non-essential amino acids. These points are explained clearly in Cook’s Instructions for Use. Consequently, the embryos introduced into K-SICM by Devreker et al. (Devreker et al., 2001) would have already been compromised and any useful comparison between Earle’s medium with amino acids and the Cook Sydney IVF media invalidated.

It would seem unfortunate that such great effort and valuable research material were expended on a study which, in spite of apparently having a carefully balanced and controlled design, was actually deeply flawed. Certainly, their findings confirm that a culture system using Earle’s medium is clearly sub-optimal but, because the Cook Sydney IVF media were so grossly misused, any conclusions on the relative ability of the Cook Culture System to support blastocyst development can have no real value.

References


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