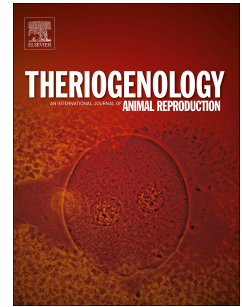


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Differential release of cell-signalling metabolites by male and female bovine embryos cultured in vitro

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ABSTRACT

Male and female early bovine embryos show dimorphic transcription that impacts metabolism. Individual release of metabolites was examined in a 24h single culture medium from Day-6 male and female morulae that developed to Day-7 expanded blastocysts. Embryos were produced in vitro, fertilized with a single bull and cultured in SOFaaci+6g/L BSA. The embryonic sex was identified (amelogenin gene amplification). Embryos (N=10 males and N=10 females) and N=6 blank samples (i.e. SOFaaci+6g/L BSA incubated with no embryos) were collected from 3 replicates. Metabolome was analysed by UHPLC-TOF-MS in spent culture medium. After tentative identification, N=13 metabolites significantly ($P<0.05$; ANOVA) differed in their concentrations between male and female embryos, although N=10 of these metabolites showed heterogeneity (Levene's test; $P>0.05$). LysoPC(15:0) was the only metabolite found at higher concentration in females (fold change [FC] male to female = 0.766). FC of metabolites more abundant in male culture medium (N=12) varied from 1.069 to 1.604. Chemical taxonomy grouped metabolites as amino-acids and related compounds (DL-2 aminooctanoic

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