Potensi platelet rich plasma untuk menginduksi proliferasi dan diferensiasi sel punca jaringan testis pada azoospermia: tinjauan pada ekspresi mRNA PLZF, OCT4 dan CKIT = Platelet rich plasma potential to induce proliferation and differentiation of testicular stem cell on azoospermic patient: a review of mRNA PLZF, OCT4 and CKIT expression

Debby Aditya, author

Abstrak

Latar belakang: Platelet rich plasma (PRP) merupakan faktor pertumbuhan yang mendukung proliferasi, diferensiasi sel punca in vitro. PRP diyakini dapat digunakan sebagai alternatif pengganti dari fetal bovine serum (FBS) karena bersifat xenofree. Tujuan dari penelitian ini adalah untuk mengetahui efisiensi PRP dalam mendukung proliferasi dan diferensiasi SSCs dan menganalisis korelasi antara tingkat spermatogenesis melalui penilaian Johnson dengan ekspresi gen potensi proliferasi (PLZF, OCT4) dan diferensiasi (CKIT) SSCs.
Metode: SSCs diisolasi dari tiga sisa jaringan biopsi testis hasil ektraksi spermatozoa (TESA/TESE) dari pasien azoospermia. Hasil isolasi sel dikultur pada medium DMEM-F12 dengan faktor pertumbuhan spesifik (GDNF, bFGF, EGF) yang selanjutnya dibedakan menjadi dua kelompok medium kultur berdasarkan penambahan PRP atau FBS. Hasil sel kultur dianalisis ekspresinya terhadap gen PLZF, OCT4, dan CKIT dengan qRT-PCR. Tingkat spermatogenesis dianalisis dengan penilaian Johnson melalui pemeriksaan histologi.
Hasil: PLZF, OCT4, dan CKIT diekspresikan oleh hasil sel kultur pada kelompok PRP dan FBS, namun tidak bermakna signifikan. Tidak terdapat korelasi antara tingkat spermatogenesis dengan ekspresi gen potensi proliferasi (PLZF dan OCT4) dan diferensiasi (CKIT) SSCs pada kelompok PRP dan FBS.
Kesimpulan: PRP mampu mendukung potensi proliferasi dan diferensiasi SSCs in vitro serta dapat menjadi alternatif pengganti FBS.
.....Background: Platelet rich plasma (PRP), performing as an alternative candidate to fetal bovine serum (FBS), is a concentrate containing growth factors, support proliferation and differentiation of stem cells in vitro. The objective of this work was to determine the efficiency of PRP in supporting SSCs proliferation and differentiation and assessed the correlation between the level of spermatogenesis through scoring Johnson toward the proliferation and differentiation of SSCs in vitro.
Methods: SSCs were isolated from three of surplus testicular tissue by sperm extraction (TESA/TESE) from azoospermic patients, then SSCs were cultured into DMEM-F12 with growth factors (GDNF, bFGF, EGF), further categorized into PRP and FBS groups. The resulting cell was quantitative analyzed by qRT-PCR towards the expression of PLZF, OCT4 and CKIT. The level of spermatogenesis was observed by scoring Johnson from histology measurement.
Results: The qRT-PCR analysis revealed the expression of PLZF, OCT4 and CKIT in the resulting cell culture. The difference was statistically insignificant among PRP and FBS. There was no correlation between the potency of proliferation (PLZF and OCT4) and differentiation (CKIT) of SSCs toward the level of spermatogenesis in both groups.

Conclusion: PRP could support the maintenance of proliferation and differentiation SSCs in vitro and could be developed as an alternative supplementation of FBS.