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Background

Alveolar bone resorption is a sequelae following tooth extraction. Many new materials have been invented and discovered to provide better care for the patients, including the PLGA and CGF. PLGA is a synthetic polymer that is well known for its use in drug delivery while CGF is the third generation of platelet concentrate product that are rich in growth factors.

Objective

To investigate the influence PLGA scaffold with CGF on the biological behavior of MG 63 human osteoblast cells line for bone regeneration

Materials and Methods

Preparation of PLGA microspheres with double solvent evaporation method

10ml blood was collected from a volunteered patient and centrifuged to obtain the CGF (Table Top Centrifuge Kubota 2420)

CGF was centrifuged together with different weight of PLGA microspheres
sample 1: 100µg
sample 2: 25µg



Figure 1: CGF formed after centrifugation process

MG 63 human osteoblast cells were cultured and incubated with
i) sample 1 (CGF + 100µg PLGA)
ii) sample 2 (CGF + 25µg PLGA)
iii) CGF alone
for 24 and 48 hours

Cells proliferation was assessed by MTS assay

Discussion

PLGA: excellent scaffold for drug delivery and tissue engineering procedures

SEM observation : PLGA microspheres were presented with **pores** that can act as a **scaffold and passage** for growth factors

CGF: source of growth factors

Conclusion

The use of PLGA scaffold with CGF has the potential to induce better human osteoblast cells proliferation and regenerative activity to facilitate better bone regeneration.

Results

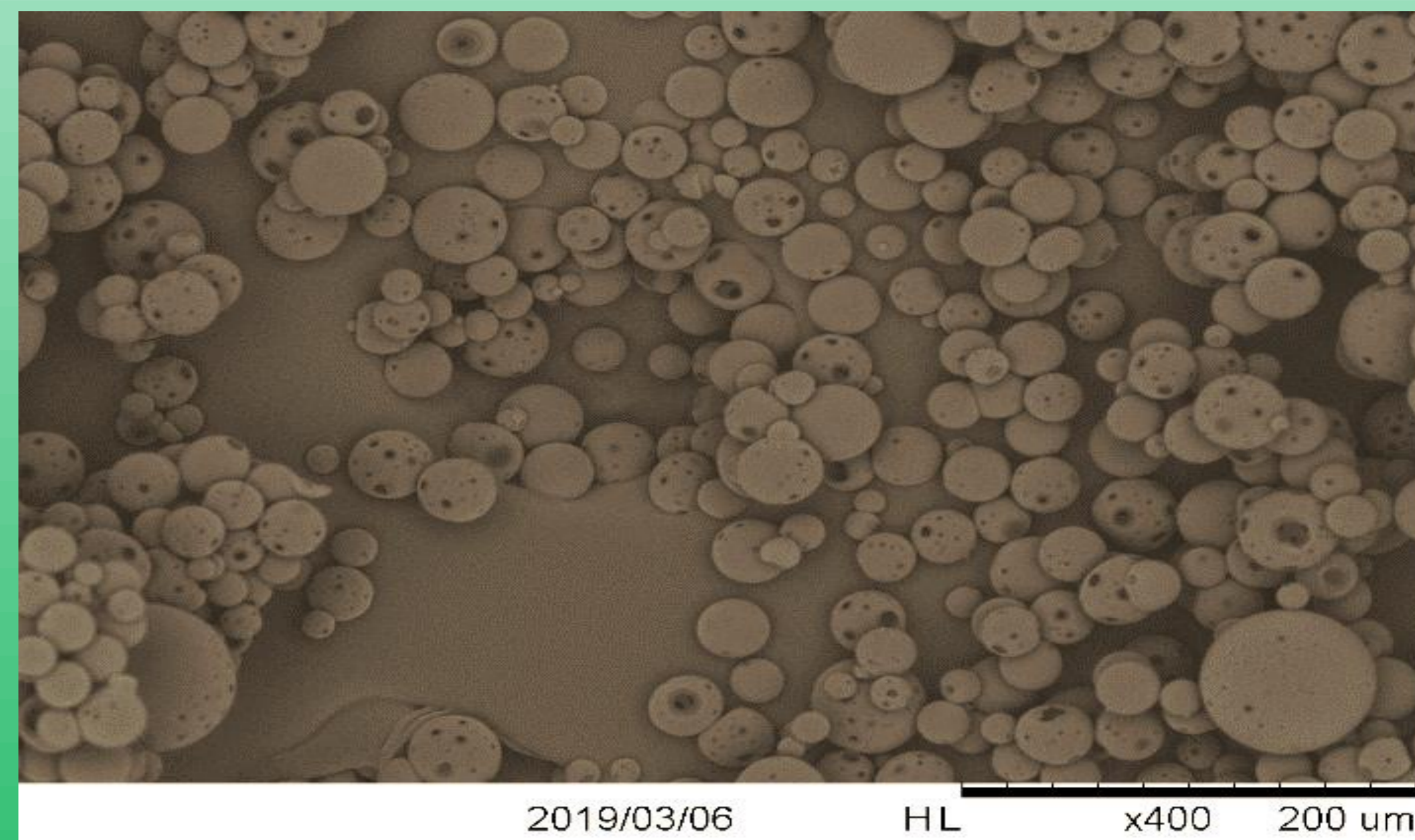


Figure 2: SEM observation of PLGA microspheres (x 400 magnification)

Table 1: MG63 human osteoblast cells count proliferation (density, cells/ml)

Sample	Time (Hours)	
	24	48
CGF only	0.52 ± 0.15	0.38 ± 0.02
CGF + PLGA (100µg)	1.26 ± 0.04	0.61 ± 0.04
CGF + PLGA (25µg)	1.28 ± 0.12	0.59 ± 0.07
Control	0.46 ± 0.06	0.56 ± 0.15

Percentage of MG63 human osteoblast cells

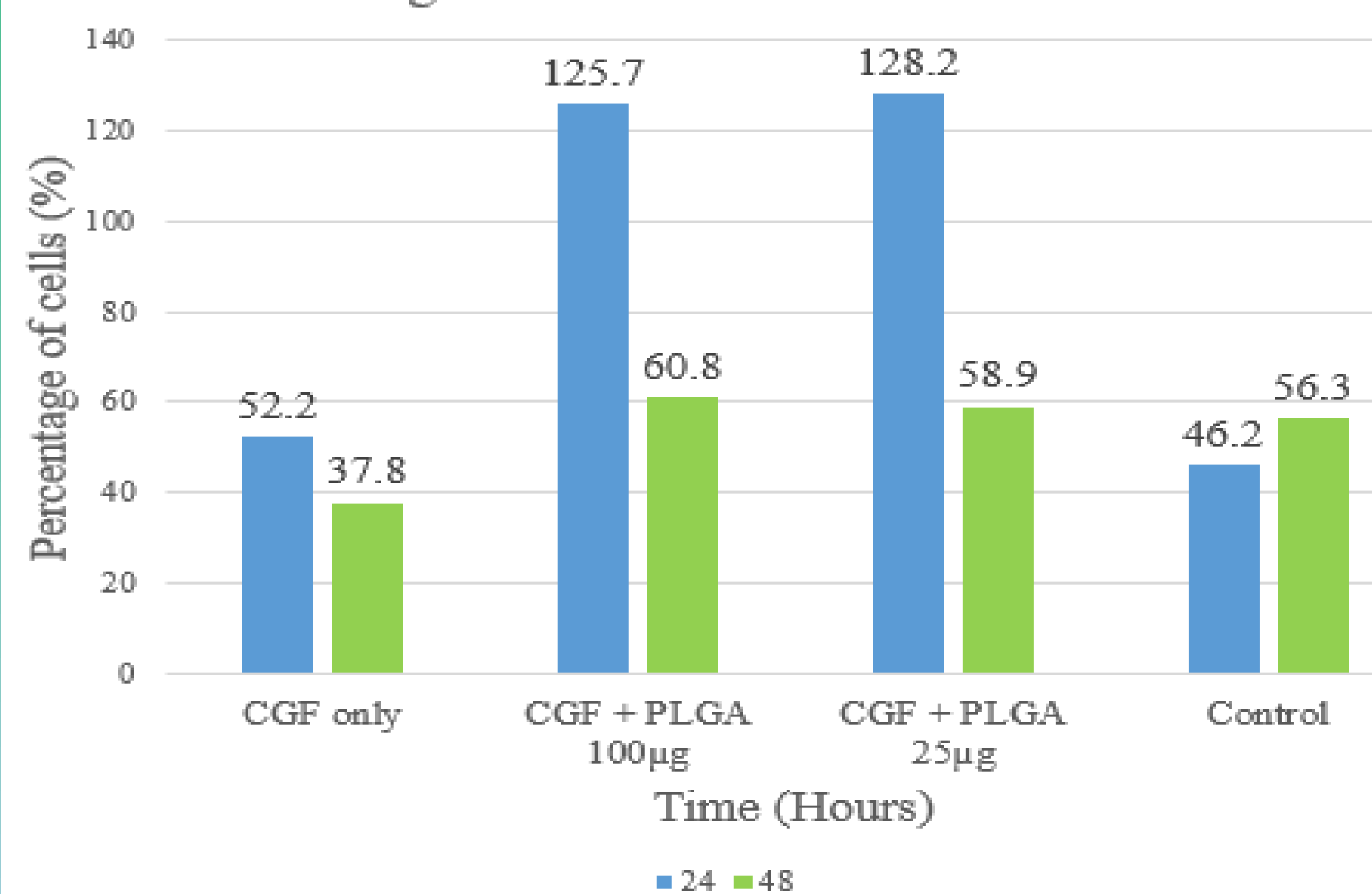


Figure 3: Bar chart of percentage of MG63 human osteoblast cells proliferation

Acknowledgement

The authors appreciate kind assistance by Sarmila Hanim Mustafa throughout the study.

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