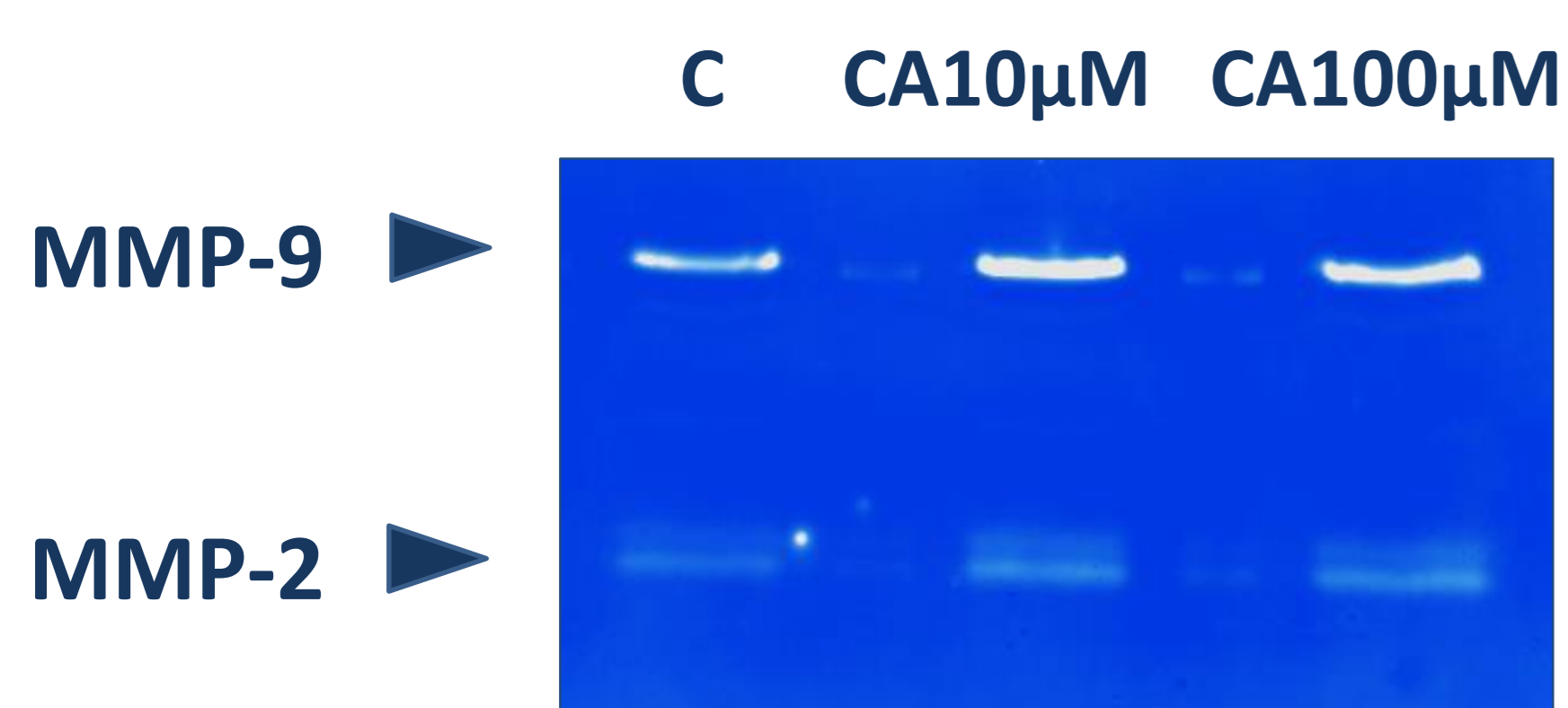


Introduction

In the everyday diet of pregnant women, plant products with high concentrations of polyphenol compounds are relatively common. Caffeic acid is a natural polyphenolic compound deriving from various fruits, spices and beverages present in nutrition, with proven antioxidative, anti-inflammatory and anti-cancer activities. In the western world, daily intake of caffeic acid goes as high as 260 mg, 90% of which can be resorbed in the digestive system. Having that in mind, it is of great importance to explore the effects of caffeic acid on placental function. Extravillous trophoblast cells are specific placental cells that invade into the uterine stroma and spiral arteries and directly contact the mother's tissue.

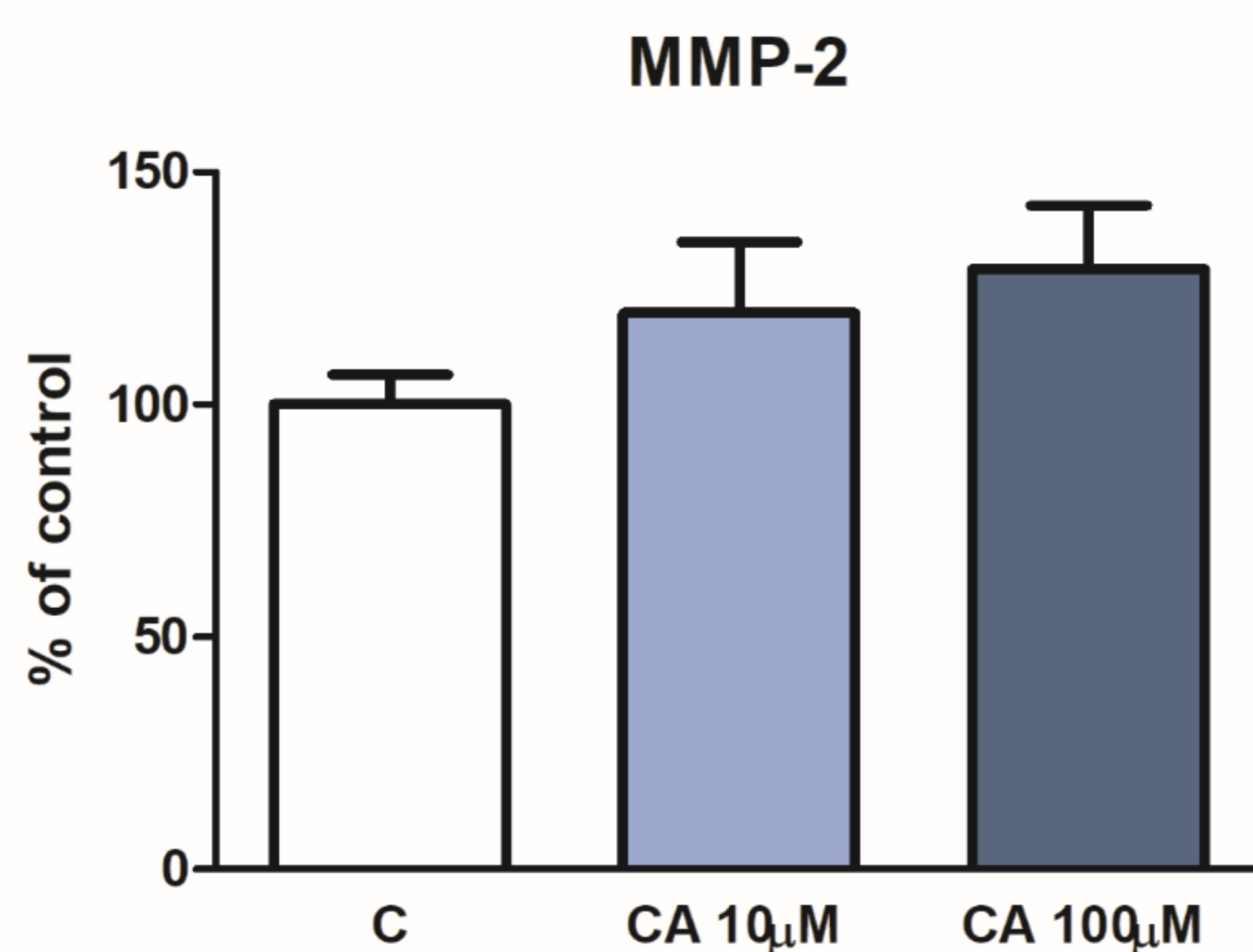
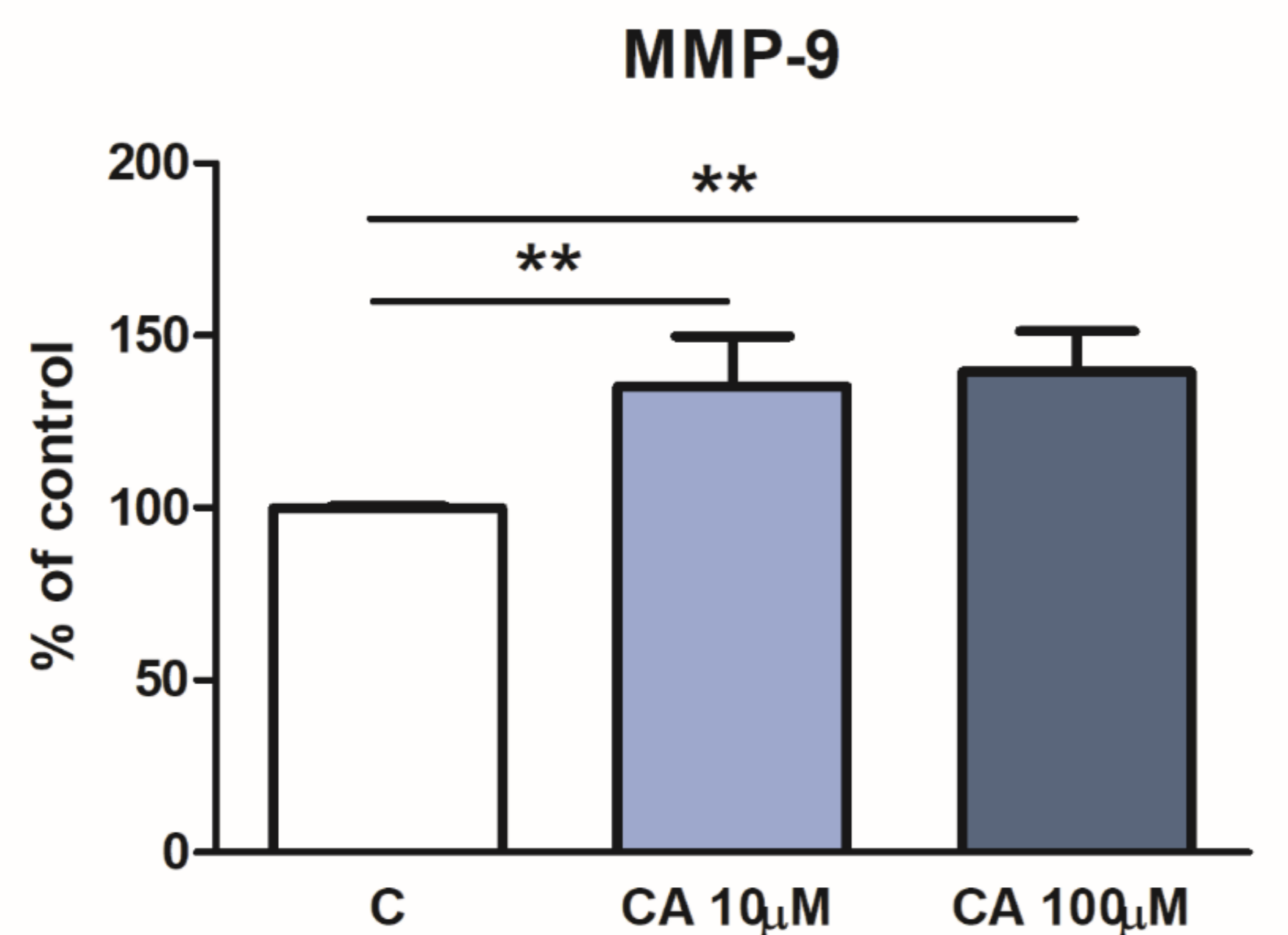
This study was undertaken to explore the effects of caffeic acid on trophoblast cell migration and the levels of matrix metalloproteinases (MMP)-2 and -9, essential for the trophoblast invasion process.

Results

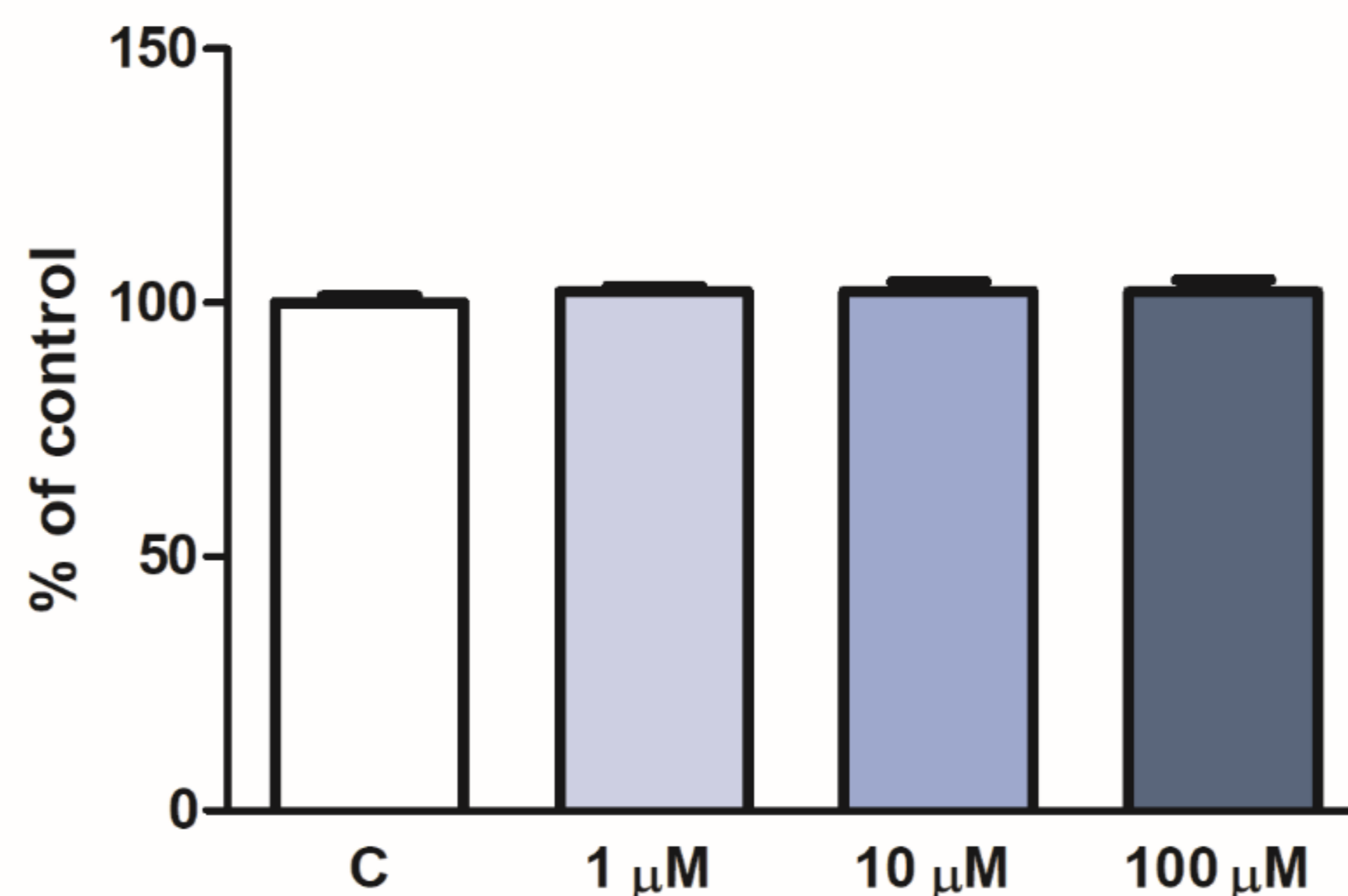


Material and methods

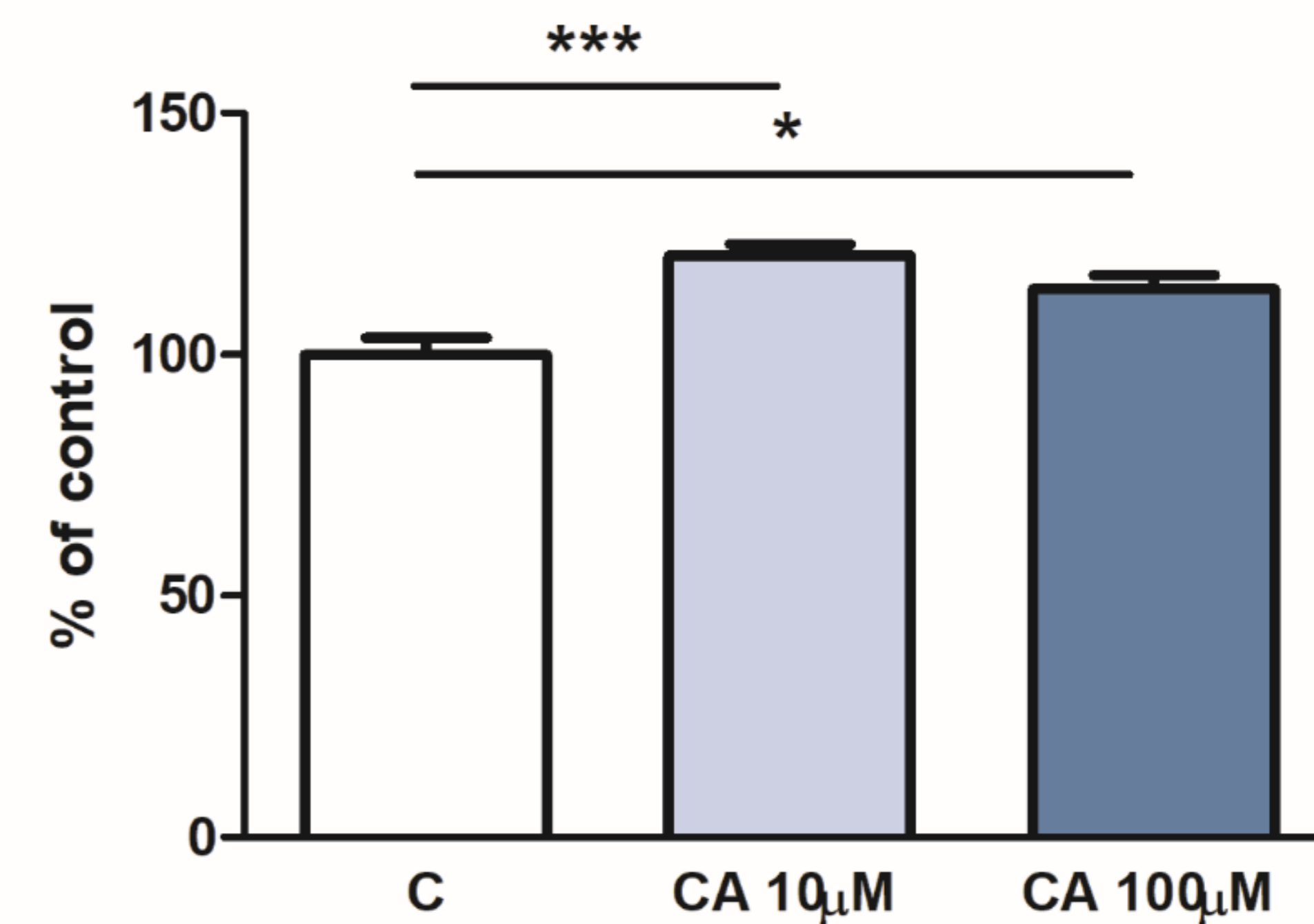
- Cells- Extravillous trophoblast cell line HTR-8/SVneo derived from first trimester placental tissue explants was used as a model
- Cell viability was assessed by MTT assay
- Cell migration was measured using a wound healing „scratch“ assay
- Levels of MMP-2 and MMP-9 were determined semi-quantitatively by SDS-PAGE gelatine zymography and subsequent densitometric analysis of obtained zymograms



The effect of caffeic acid (CA) on the levels of MMP-2 and MMP-9 in HTR-8/SVneo cell conditioned media following 24h of treatment. Representative zymogram is shown. Data are expressed as mean+SEM. **p<0.01



The effect of different concentrations of caffeic acid (on HTR-8/SVneo cell viability after 24h of treatment. Data are expressed as mean+SEM.



The effect of caffeic acid (CA) on HTR-8/SVneo cell migration following 24h of treatment. Data are expressed as mean+SEM. *p<0.05, ***p<0.001

Conclusion

The results point to potential beneficial effects of food and/or supplements rich in caffeic acid consumption during early pregnancy. However, a clinical study should be undertaken to assess their true potential for increasing pregnancy success.