



Role of glucagon peptide-1 (GLP1) receptor agonists in sperm function

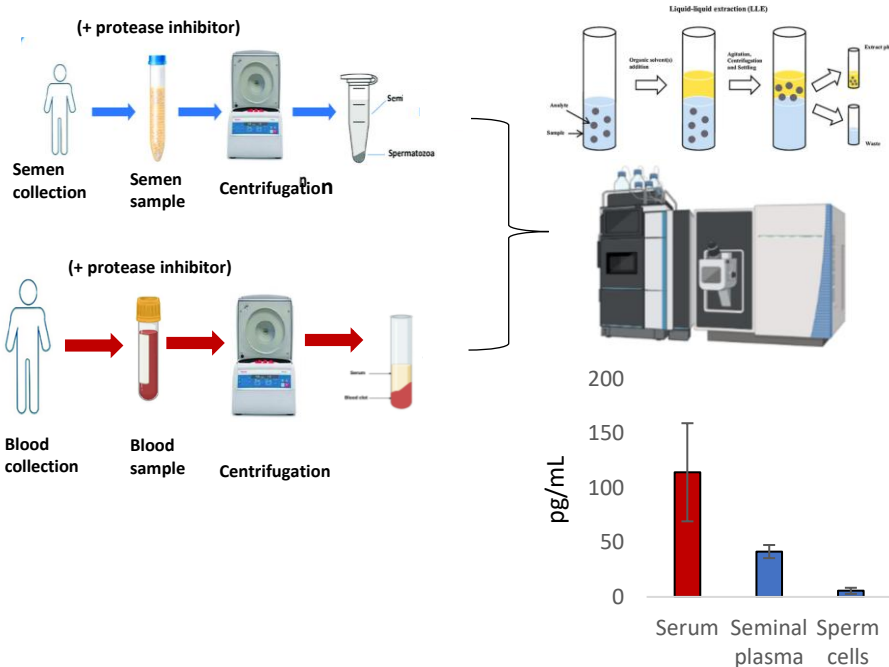
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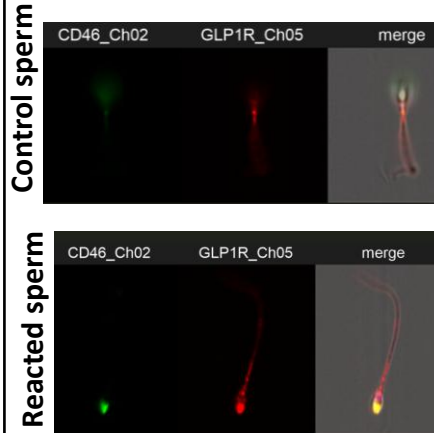
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GLP1 physiological concentration in 15 serum, seminal plasma and sperm cell samples from healthy donors by liquid chromatography/Mass spectrometry method (LC-MS)

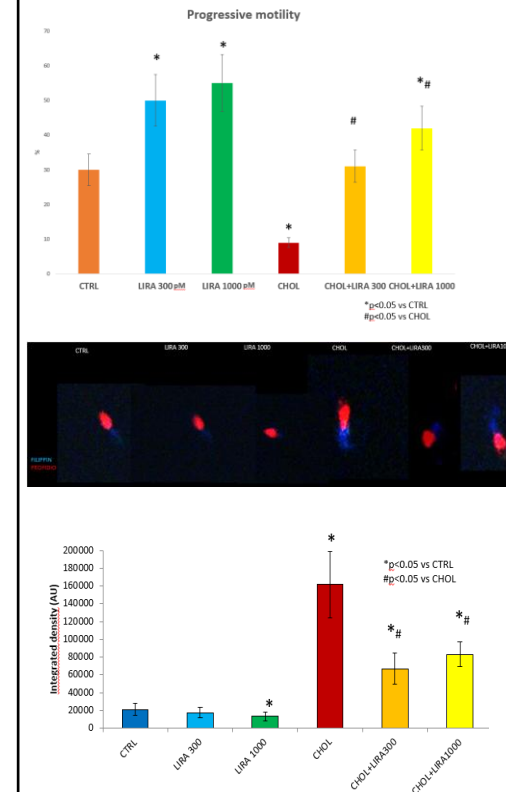


GLP1 receptor localization and expression in sperm cells before and after acrosomal reaction (CD46)



GLP1-R increased localization and nuclear expression in reacted sperm cells compared with baseline (77,19% vs. 54.37%, respectively, $p < 0,05$).

Sperm treated *in vitro* for cholesterol addition and not (naive), successfully were incubated with varying concentrations of GLP-1R agonist



Cholesterol-enriched sperm membranes are indeed found to be less fluid, resulting in reduced sperm motility. Preliminary results indicate that GLP1-RA treatment increases sperm motility in a concentration-dependent manner (basal = $30 \pm 2\%$; GLP1-RA 300 pM = $50 \pm 8\%$; 1000 pM = $55 \pm 10\%$ progressive motility, all $p < 0.05$ vs. baseline), even in cholesterol-enriched spermatozoa (cholesterol alone = $9 \pm 1\%$; cholesterol+GLP1-RA 300 pM = $28 \pm 7\%$; cholesterol+GLP1-RA 1000 pM = $42 \pm 8\%$ progressive motility, $p < 0.05$ compared with cholesterol alone), presumably through a reduction in sperm membrane cholesterol (mean reduction = -50% in both cholesterol-naïve and cholesterol-enriched spermatozoa compared with baseline, $p < 0.05$), as measured by filippin staining by immunofluorescence.