

# INSULIN LEVELS IN FASTING, GLUCOSE INFUSED, AND FEEDING ELEPHANT SEAL PUPS.

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Blood samples from nursing elephant seal pups (Mirounga angustirostris) reveal remarkably low levels of insulin ( $< 10 \mu\text{U/ml}$ ). During the 8-12 week fast after weaning, blood insulin levels remain very low, despite paradoxically high levels of glucose in plasma ( $> 150 \text{ mg\%}$ ). In humans, glucose levels are low during long fasts and are accompanied by low insulin levels which may be elevated by glucose infusion or feeding. We report that infusion of glucose in long term, naturally fasting pups to levels exceeding 300 mg% failed to produce measurable change in circulating insulin, which remained less than  $10 \mu\text{U/ml}$ . Finally, we examined insulin levels in captive weaned pups that were feeding on fish. Only slight elevations in plasma insulin (to  $< 30 \mu\text{U/ml}$ ) appeared about 1 hr after feeding. We suggest two explanations for these unusual results; 1) insulin plays only a minor regulatory role in metabolic homeostasis in this stage of elephant seal's life cycle or 2) the regulatory set point for substrate evoked insulin release is substantially higher than that in other species. Supported by MBS-NIH DRR-S06-RR08132-04 and NSF DEB 77-17063.