

# DAY 10 : ALPHA BENCHMARK VERDICT

This document summarizes the benchmark evaluation of a PPO-based trading agent against trivial baselines under identical market conditions and out-of-sample evaluation.

## **Does alpha exist?**

No. The RL agent fails to achieve a positive Sharpe ratio and does not demonstrate statistically defensible alpha.

## **Against which baseline(s)?**

The RL agent does not outperform either the Buy & Hold strategy or the Random baseline when evaluated under identical conditions.

## **At what risk cost?**

The RL agent maintains near-zero drawdowns and minimal portfolio volatility, indicating a highly risk-averse policy that prioritizes capital preservation over return generation.

## **Conclusion:**

Under the current reward structure, the RL agent learns risk avoidance rather than return-seeking behaviour. While learning is present, no meaningful alpha is observed.