Immune responses have been shown to underlie sex-related differences in clinical outcomes for COVID-19 patients. As immune responses are, in part, regulated by metabolites, we examined the serum metabolome of COVID-19 patients to determine sex-specific metabolic regulation. We observed that male patients have elevated kynurenic acid production which associated with elevated cytokine levels and poorer clinical outcomes. The study also suggested a positive feedback between metabolites and immune responses which could underlie the differential sex-specific responses to COVID-19.