

Direct aspiration of vitreous humour using a hypodermic syringe may yield 2–3mL of fluid per eye. The needle should be placed in the central globe and aspirated with gentle suction. Preservation with sodium fluoride is generally recommended. The eye is located within the protective environment of the orbit and, being essentially outside the body, is remote from other tissues. Vitreous fluid is therefore a particularly useful specimen owing to its anatomical isolation, affording it notable resistance in terms of microbial invasion and degradation, as well as being remote from the central organs and subsequently less susceptible to postmortem redistribution phenomena. Vitreous humour is particularly useful for cases involving digoxin or hydrophilic analytes including paracetamol (acetaminophen) and salicylates. The equilibrium that exists between blood and vitreous fluid is slower than with other extracellular fluids, which can result in a slight delay in uptake. Furthermore, only free drugs are able to leave the blood and enter the vitreous humour. Since eye fluid is sterile and less susceptible to microbial contamination and hence postmortem alcohol production, it is routinely used for ethanol determination owing to its interpretive value from the standpoint of postmortem alcohol production and the determination of the pre- or post-absorptive phase of ethanol use (Honey et al. 2005). Vitreous humour is particularly useful for postmortem analysis of glucose, urea nitrogen, uric acid, creatinine, sodium and chloride.

These are important analytes for the evaluation of diabetes, degree of hydration, electrolyte imbalance, postmortem interval and the state of renal function prior to death (Coe 1977, 1993). Sodium, calcium and chloride concentrations in vitreous humour during the early postmortem interval can be used to estimate antemortem serum concentrations. It is therefore important that sodium fluoride is not added to specimens requiring vitreous chemistries. For that reason, vitreous humour is frequently collected into two separate containers: one preserved (for drug and alcohol testing) and one unpreserved (for clinical purposes).