

# In vitro compatibility of various cardioactive drugs during simulated Y-site administration

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## Abstract

**Objectives** Physicochemical incompatibilities between intravenous drugs are a recurrent problem in ICUs. A study was undertaken to evaluate the physicochemical compatibility of five common associations of cardioactive drugs: dopamine (DA)–norepinephrine (NE); dobutamine (DU)–NE; amiodarone (AM)–DU–NE; DU–sodium nitroprusside (NI)±sodium thiosulfate (THIO); and NI–THIO.

**Methods** The drugs were diluted in the usual manner performed in the ICU. Their compatibility was verified by visual inspection of the different mixtures in glass tubes and by chemical assays and pH determination of the mixtures collected during in vitro simulated Y-site administration (solutions prepared in syringes placed on syringe pumps and connected to a Swan–Ganz catheter). Solutions were considered to be compatible in the absence of any visual change in the solution and of any significant variation in pH value and drug concentration at each time of the study.

**Results** DA–NE, DU–NE, DU–NI (±THIO) and NI–THIO associations were compatible over 24 h in the tested proportion ranges, with the proviso that NI was protected from light. In addition, it was observed that AM, DU and NE were compatible but, in the dynamic simulation, AM reached the expected concentration only after 4 h.

**Conclusions** When combined, the cardioactive amines were stable over 24 h. AM was compatible with DU and NE, but with a latency period owing to its adsorption on the heparin-coated Swan–Ganz catheter. Mixtures involving NI were compatible provided that NI was supplied in amber syringes or protected with aluminum foil.

**Keywords:** IV administration, incompatibility, cardioactive amines, dopamine, norepinehrine, adrenaline, dobutamine, amiodarone, sodium nitroprusside, sodium thiosulfate