**Supplementary Table 3.**  Detailed summary of information extracted from included studies

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| --- | --- | --- | --- | --- |
| **Author(year)** | **Study Design** | **Animal Characteristics** | **Intervention Characteristics** | **Primary Outcome** |
| **HIE Model** | **Anesthetic** | **Animal Model;Gender** | **Age** | **Immuno-deficient?** | **Source; (Origin)** | **Dose; Delivery; Timing; Frequency** | **Cognitive** | **Sensori- motor** |
| Cameron(2015) | Right CAL, followed by 90 min of hypoxia (8% O2) 2.5 hrs after ligation | Nitrous oxide + halothane | Sprague-Dawley rat; male | HIE on PN7 | No | Bone marrow from adult male Sprague-Dawley rats(allogeneic) | 0.75-1 x 106;subcutaneous; 7 days post-HIE;1x |   | **CRTStaircase test** |
| Ding(2014) | Left CAL, followed by 2.5 hrs of hypoxia (8% O2) 2 hrs after ligation  | Chloral hydrate | Wistar rat;not reported | HIE on PN7 | No | Term placenta from healthy rats(allogeneic) | 5 x 105;intracerebral;2 days post-HIE;1x | **Water maze** |   |
| Donega(2013) | Right CAL, followed by 45 min of hypoxia (10% O2) immediately after ligation | Isoflurane | C57BL/6 mouse;not reported | HIE on PN9 | No | C56Bl/6 mice(allogeneic) | 0.25-1 x 106;intranasal;3, 10, 17, or 3+10 days post-HIE;1x or 2x | **NORT** | **CRT** |
| Donega(2014) | Right CAL, followed by 45 min of hypoxia (10% O2) immediately after ligation | Isoflurane | C57BL/6 mouse;not reported | HIE on PN9 | No | Bone marrow from healthy human donors(xenogeneic) | 1-2 x 106;intranasal;10 days post-HIE;1x |   | **CRT** |
| Donega(2015) | Right CAL, followed by 45 min of hypoxia (10% O2) immediately after ligation | Isoflurane | C57BL/6 mouse;male and female | HIE on PN9 | No | Bone marrow from C57BL/6 mice(allogeneic) | 0.5 x 106;intranasal;10 days post-HIE;1x | **NORT** | **CRT** |
| Gu(2015) | Left CAL, followed by 2.5 hrs of hypoxia (8% O2) 2 hrs after ligation | Not reported | Wistar rat;not reported | HIE on PN7 | No | Bone marrow from 3-4 week old rats(allogeneic) | 1.5 x 106;intracerebroventricular;2 days post-HIE;1x | **Water maze** |   |
| Gu(2016) | Left CAL, followed by 2.5 hrs of hypoxia (8% O2) 2 hrs after ligation | Not reported | Sprague-Dawley rat;not reported | HIE on PN7 | Yes | Rats(allogeneic) | 2 x 105;intracerebroventricular;5 days post-HIE;1x | **Water mazeNORTfEPSP** |   |
| Jellema(2013) | UCO via an inflatable vascular occluder for 25 min, followed by reperfusion for 7 days | Not reported | Texel sheep;not reported | HIE on gestational day105.5 ± 1.1 | No | Bone marrow from healthy human male donor(xenogeneic) | 3.5 x 106;IV;1 hour post-HIE;1x | **EEG seizureburden** |   |
| Kim(2012) | Right MCAO | Isoflurane + pentobarbitol | Sprague-Dawley rat;male | HIE on PN10 | No | Umbilical cord blood from human donors(xenogeneic) | 1 x 105;intraventricular;6 hours post-HIE;1x |   | **CRTRR** |
| Lee(2010) | Bilateral CAL with severance of the left common carotid artery, followed by 3.5 hrs of hypoxia (8% O2) 2 hrs after ligation | Ketamine + xylazine  | Sprague-Dawley rat;male | HIE on PN7 | No | Bone marrow from human donors undergoing orthopedic surgery(xenogeneic) | 1 x 106;intracardiac;3 days post-HIE;1x |   | **CRTRR** |
| van Velthoven(2010)A  | Right CAL, followed by 45 min of hypoxia (10% O2) immediately after ligation | Isoflurane | C57BL/6 mouse;male and female | HIE on PN9 | No | Bone marrow from femur and tibia of 6-8 wk old C57Bl/6-Tg (UBC-GFP) 30Dcha/J mice(allogeneic) | 1 x 105;intracerebral;3 or 10 day post-HIE;1x |   | **CRT** |
| van Velthoven(2010)B | Right CAL followed by 45 min of hypoxia (10% O2) immediately after ligation | Isoflurane | C57BL/6 mouse;not reported | HIE on PN9 | No | Bone marrow from femur and tibia of 6-8 wk old C57Bl/6-Tg (UBC-GFP) 30Dcha/J mice(allogeneic) | 1 x 105;intracerebral;3 or 3+10 day post-HIE;1x or 2x |   | **CRTRR** |
| van Velthoven(2010)C | Right CAL, followed by 45 min of hypoxia (10% O2) immediately after ligation | Isoflurane | C57BL/6 mouse;male and female | HIE on PN9 | No | Bone marrow from femur and tibia of 6-8 wk old C57Bl/6-Tg (UBC-GFP) 30Dcha/J mice(allogeneic) | 5 x 105;intranasal s/p hyaluronidase;10 days post-HIE;1x |   | **CRT** |
| van Velthoven(2012) | Right CAL followed by 45 min of hypoxia (10% O2) immediately after ligation | Isoflurane | C57BL/6 mouse;not reported | HIE on PN9 | No | 8 wk old C57Bl/6-Tg (UBC-GFP) 30Dcha/J mice(allogeneic) | 1 x 105;intracerebral;3+10 days post-HIE;2x |   | **CRT** |
| van Velthoven(2013) | Right MCAO | Isoflurane | Sprague-Dawley rat;not reported | HIE on PN10 | No | Sprague Dawley rat(allogeneic) | 1 x 106;intranasal s/p hyaluronidase;3 days post-HIE;1x |   | **CRTAdhesive removal test** |
| Xia(2010) | Left CAL, followed by 2.5 hrs of hypoxia (8% O2) 3 hrs after ligation | Halothane | Sprague-Dawley rat;not reported | HIE on PN7 | Yes - daily intraperitoneal injection of cyclosporin A from 2 days post-HIE until death | Umbilical cord blood from full-term human newborns(xenogeneic) | 1 x 105;intracerebroparenchymal;3 days post-HIE;1x |   | **mNSS** |
| Zhang(2014) | Right CAL, followed by 2 hrs of hypoxia (8% O2) 2-3 hrs after ligation | Ether | Sprague-Dawley rat;not reported | HIE on PN7 | No | Wharton's jelly from human umbilical cords(xenogeneic) | 5 x 105 (IV) or 5 x 106 (IP);IV or intraperitoneal;1 or 3 days post-HIE;1x  | **Water maze** | **RRLonga score** |
| Zhou(2015) | Unclear - Rice model | Not reported | Sprague-Dawley rat;not reported | Not reported | No | Human umbilical cord(xenogeneic) | 2 x 105;intracerebroventricular;5 days post-HIE;1x | **Water mazeNORTfEPSP** |   |
| Zhu(2014) | Left CAL, followed by 4 hrs of hypoxia (6% O2) 2 hrs after ligation | Ether | Sprague-Dawley rat;not reported | HIE on PN3 | No | Human umbilical cord(xenogeneic) | 1 x 106;intraperitoneal;1, 2, and 3 days post-HIE;3x |   | **CRTOpen field test** |
| **Abbreviations:** carotid artery ligation (CAL); middle cerebral artery occlusion (MCAO); hypoxic ischemic encephalopathy (HIE); postnatal (PN); intravenous (IV); intraperitoneal (IP); cylinder rearing test (CRT); rotarod (RR); novel object recognition test (NORT); field excitatory postsynaptic potential (fEPSP) |