Supplementary Digital Content

SDC1: Donor and Recipient Characteristics for HMP Kidneys

Characteristic	Overall (26)	IGF (19)	DGF (7)	P Value
Donor				
Male gender	16 (62%)	11 (58%)	5 (71%)	0.67
Median age (IQ range)	47 (40-60)	47 (42-59)	51 (31-61)	1.00
CMV +ve	12 (46%)	8 (42%)	4 (57%)	0.67
DBD(Maastricht Category III)	23 (88%)	18 (95%)	5 (71%)	0.17
DCD(Maastricht Category IV)	3 (12%)	1 (5%)	2 (29%)	0.23
SCD	16 (62%)	13 (68%)	3 (18%)	0.37
ECD	10 (38%)	6 (32%)	4 (57%)	0.37
Recipient				
Male gender	18 (69%)	12 (63%)	6 (86%)	0.37
Median age (IQ range)	50 (44-54)	50 (44-55)	50 (44-53)	0.94
Ethnicity: British	18 (69%)	14 (74%)	4 (57%)	0.64
Asian	5 (19%)	4 (21%)	1 (14%)	1.00
Black	3 (12%)	1 (5%)	2 (29%)	0.17
Virology: CMV+	12 (46%)	7 (37%)	5 (71%)	0.19
HAV+	2 (8%)	1 (5%)	1 (14%)	0.47
HBV cAb+	3 (12%)	1 (5%)	2 (29%)	0.17
HBV sAb+	1 (4%)	1 (5%)	0 (0%)	1.00
HCV +	0 (0%)	0 (0%)	0 (0%)	1.00
HIV+	0 (0%)	0 (0%)	0 (0%)	1.00
Dialysis: HD	18 (69%)	12 (63%)	6 (86%)	0.37
PD	6 (23%)	5 (26%)	1 (14%)	1.00
Pre	2 (8%)	2 (11%)	0 (0%)	1.00
Previous transplant ≥1	3 (12%)	3 (16%)	0 (0%)	0.54
PRA level >5%	13 (50%)	9 (47%)	4 (57%)	1.00
0.0.0 mismatches	4 (15%)	4 (21%)	0 (0%)	0.55
Immunosuppression standard	24 (92%)	19 (100%)	5 (71%)	0.06
Storage Times (hours)				
Cold Storage time	7 (6-11)	8 (6-11)	7 (5-10)	0.33
HMP time	15 (7-17)	15 (10-17)	15 (5-22)	1.00
Total CIT	23 (16-27)	24 (17-27)	22 (15-29)	0.92
HMP Parameters				
Initial Flow ml/min	64 (43-88)	67 (49-92)	47 (39-65)	0.20

End Flow ml/min	108 (86-138)	111 (92-135)	95 (74-170)	0.72
Increase in Flow ml/min	45 (26-58)	45 (22-57)	44 (32-69)	0.43
Initial Resistance mmHg/ml/min	0.42 (0.30-0.64)	0.37 (0.28-0.56)	0.58 (0.39-0.66)	0.18
End Resistance mmHg/ml/min	0.21 (0.16-0.27)	0.20 (0.17-0.25)	0.25 (0.15-0.31)	0.52
Decrease in Resistance mmHg/ml/min	0.21 (0.08 -0.34)	0.16 (0.07-0.29)	0.26 (0.21-0.40)	0.19

CMV: cytomegalovirus, DBD: donation after brain-death, DCD: donation after cardiac-death, Maastricht Category: as defined in Kootstra G, Daemen JH, Oomen AP. Categories of non-heart-beating donors. Transplantation proceedings 1995; 27: 2893. SCD: standard criteria donor, ECD: extended criteria donor: defined as age >60 or 50-59 with 2 or more of hypertension, intracranial cause of death, creatinine >132 uM/L. HAV: hepatitis A virus, HBV: hepatitis B virus, HCV: hepatitis C virus, HIV; human immune-defiecieny virus, cAb: core antibody, sAb: surface antibody. HD: haemodialysis, PD: peritoneal dialysis. PRA: panel reactive antibodies. HMP: Hypothermic machine perfusion, CIT: cold ischaemic time. Standard immunosuppression: Basiliximab, Tacrolimus, Mycophenolate mofetil, Prednisolone. Data reported as: "Median (Quartiles)" or "N (%)", with p-values from Fisher's exact tests or Mann-Whitney tests, as appropriate *Significant at $p < 0.05$

SDC2: Composition of KPS-1®

Constituents	**Amount/1000mL**	**Concentration mM**
Calcium chloride (dehydrate)	0.068g	0.5
Sodium hydroxide	0.70g	
HEPES (free acid)	2.38g	10
Potassium phosphate (monobasic)	3.4g	25
Mannitol (USP)	5.4g	30
Glucose, beta D (+)	1.80g	10
Sodium Gluconate	17.45g	80
Magnesium Gluconate (D (-) gluconic acid, hemimagnesium salt)	1.13g	5
Ribose, D (-)	0.75g	5
Hydroxyethyl starch (HES)	50.0g	n/a
Glutathione (reduced form)	0.92g	3
Adenine (free base)	0.68g	5
Sterile water for injection (SWI)	To 1000mL volume	n/a

SDC3: Cut-off Values for ROC Curves

Predictor	**Cutoff**	**Sensitivity**	**Specificity**	**Youden's J**
Glucose (45 Mins)	9.0	100%	74%	0.737
Glucose (4 Hours)	9.7	100%	68%	0.684
Inosine (45 Mins)	0.0056	100%	68%	0.684
Leucine (45 Mins)	0.0087	67%	84%	0.509
Gluconate (4 Hours)	52.0	83%	84%	0.675

Based on Youden's J statistic

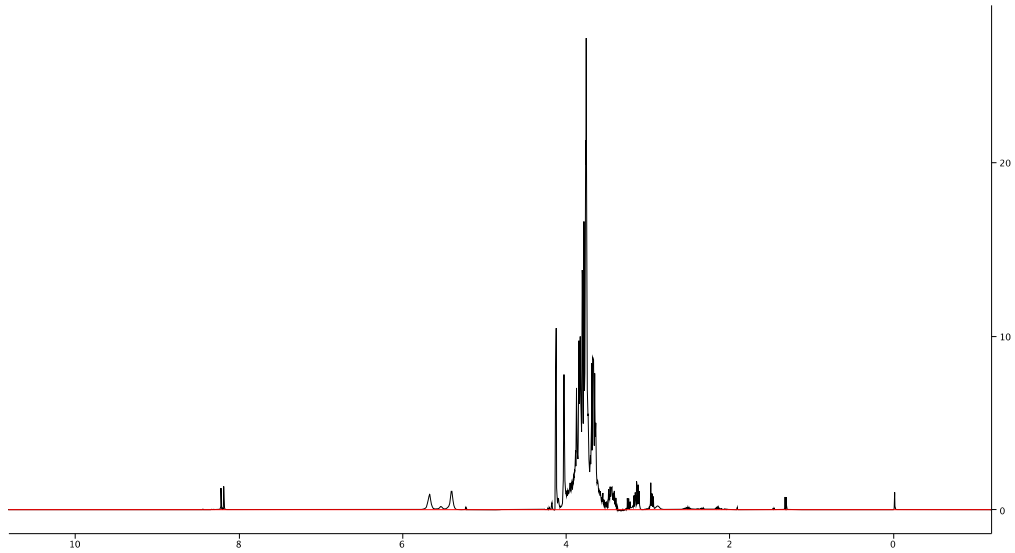
Due to small sample size, cutoffs are likely to have a wide degree of error

SDC4 : Chemical Shifts References Used for Metabolite Quantification

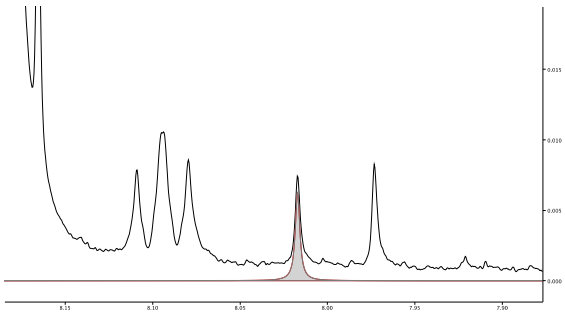
Metabolite	**NMR Chemical Shift Reference (ppm)**	**Metabolite**	**NMR Chemical Shift Reference (ppm)**
3-Hydroxybutyrate	1.204	Hippurate	7.82
3-Methylxanthine	8.02	Hypoxanthine	8.20
Acetate	1.91	Inosine	6.055
Adenine	8.11	Isoleucine	0.997
Alanine	1.46	Isopropranolol	1.162
Citrate	2.67	Lactate	1.40
Ethanol	1.17	Leucine	0.948
Formate	8.44	Malonate	3.11
Fumarate	6.51	Mannitol	3.840
Gluconate	4.12	N-Phenylacetylglycine	7.412
Glucose	3.524	Ribose	2.21
Glutamate	2.341	Tyrosine	6.877
Glutathione	2.97	Uracil	7.52
Glycine	3.54	Valine	1.029

SDC5: Example NMR Spectra

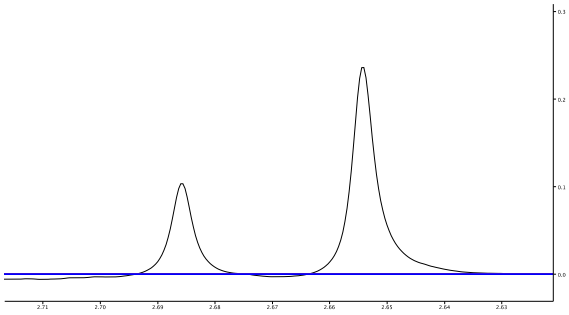
Whole Spectra



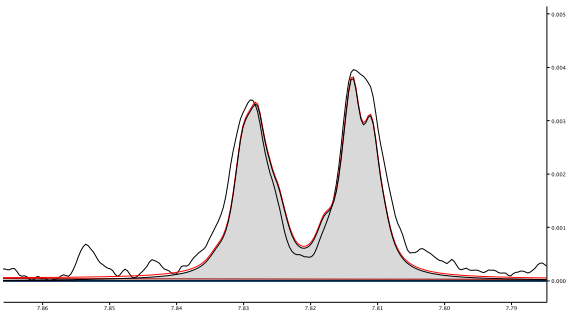
3-Methylxanthine



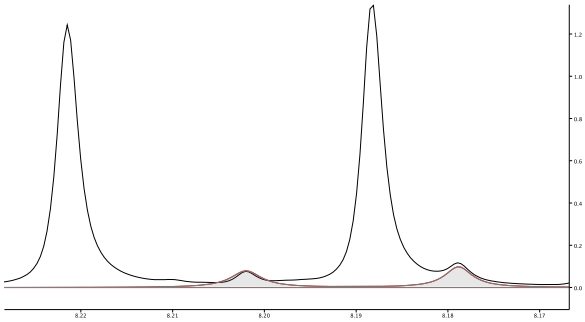
Citrate



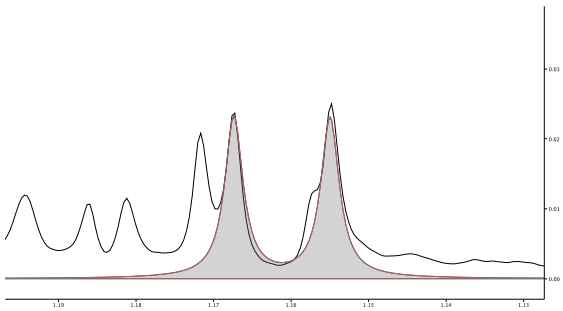
Hippurate



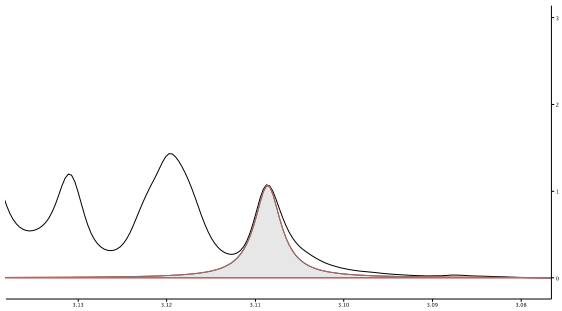
Hypoxanthine



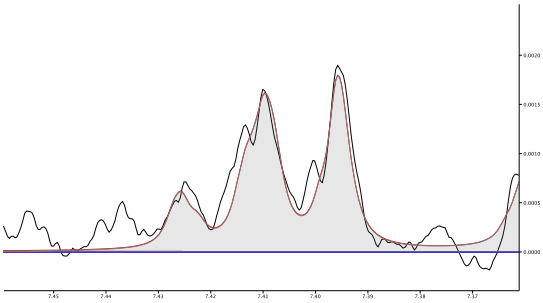
Isopropranolol



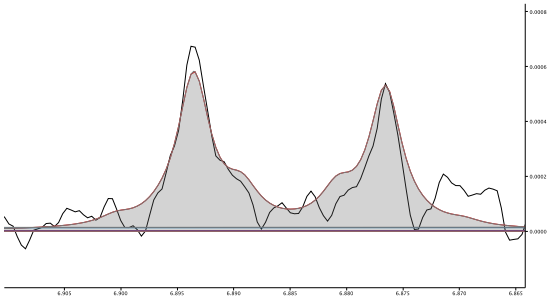
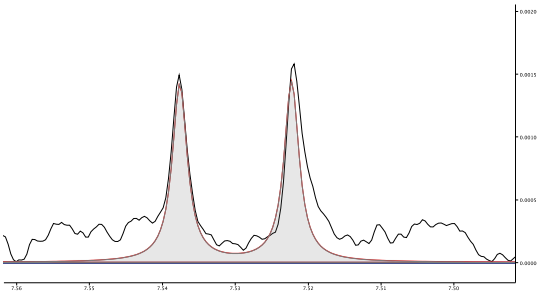
Malonate



N-phenylacetylglycine



Tyrosine



Uracil