Example of Results Generated by Faecal Sterol Analysis for Six Different Water Samples

Sterol Ratio Analysis:

ESR Number	Faecal Ratios		Human Indicative				Ruminant Indicative			Avian Indicative		Plant	Conclusion
	F1	F2	H3	H1	H2	H4	R3	R1	R2	A1	A2	P1	
	>0.5	>0.5	>1	>5%	>0.7	>75%	<1	>5%	<30%	>30%	>67%	>4	
CMB140xx1	1.02	2.27	0.21	2.1%	0.51	17%	4.25	9.9%	17%	27%	45%	4.25	Ruminant
CMB140xx2	0.36	1.58	0.32	0.2%	0.27	24%	78.05	0.7%	24%	35%	68%	78.05	Some key sterols low but suggests avian / plant decay & weak suggestion ruminant
CMB140xx3	0.41	1.65	0.50	1.1%	0.29	33%	12.25	2.2%	33%	35%	67%	12.25	Total sterol levels too low
CMB140xx4	0.49	0.91	0.88	1.4%	0.33	47%	23.09	1.6%	47%	47%	64%	23.09	Avian / plant decay
CMB140xx5	0.82	1.67	0.93	1.2%	0.45	48%	27.73	1.3%	48%	33%	52%	27.73	Avian / plant decay
CMB140xx6	5.41	8.32	2.00	26.3%	0.84	67%	1.04	13.2%	67%	10%	14%	1.04	Human

Sterol Ratio Key:

Ratios indicative of faecal pollution (either human or animal)		
F1	coprostanol/cholestanol.	>0.5 indicative of an unspecified faecal source of sterols If <0.5 may indicate avian faecal contamination
F2	24ethylcoprostanol/ 24-ethylcholestanol.	>0.5 indicative of an unspecified faecal source of sterols.
F3	24-ethylcholesterol/24-ethylcoprostanol	Ratio <1 suggests animal/human source, Ratio >4 suggests plant decay or avian source
Human indicative ratios *(values exceeding threshold in red)*		
H1	% coprostanol	Ratio >5-6% suggests human source
H2	coprostanol/(coprostanol+cholestanol)	Ratio >0.7 suggests human source
H3	coprostanol/ 24-ethylcoprostanol	Ratio >1 suggests human source
H4	coprostanol/(coprostanol+24-ethylcoprostanol)	Ratio >0.75 suggests human source
Herbivore indicative ratios *(values exceeding threshold in blue)*		
R1	% 24-ethylcoprostanol	Ratio >5-6% suggests herbivore source
R2	coprostanol/(coprostanol+24-ethylcoprostanol)	Ratio <30% suggests herbivore source
Avian indicative ratios *(values exceeding threshold in orange)*		
A1	24-ethylcholestanol/(24-ethylcholestanol+24-ethylcoprostanol+24-ethylepicoprostanol)	A1 Ratio >0.3 - 0.4 suggests avian source
A2	cholestanol/(cholestanol+coprostanol+epicoprostanol)	AND A2 Ratio >0.5 suggests avian source
Plant indicative ratios *(values exceeding threshold in green)*		
P1	24-ethylcholesterol/24-ethylcoprostanol	Ratio >4.0 suggests plant decay/run-off Ratio >7.0 may indicate avian pollution

Notes:

Note that ratios must be interpreted with consideration to the levels of sterols, and relative to one another. For example H1 is typically also above 5-6% in ruminant faeces. Plant sterols and mixed sources also have differing effects on sterol interpretations which must be considered. Conclusions are the best interpretation of sterols by our expert opinion. It is important to establish whether human or herbivore pollution is present by using ratios H1, H2 and/or R1), before applying the other human and herbivore ratios.

Sterol Analysis Data:

ESR Number	CMB140xx1	CMB140xx2	CMB140xx3	CMB140xx4	CMB140xx5	CMB140xx6
coprostanol	139	*13*	*14*	38	28	3604
24-ethylcoprostanol	662	41	28	43	30	1806
epicoprostanol	25	*4*	*3*	*5*	*4*	332
cholesterol	1388	1635	671	1022	974	4076
cholestanol	136	36	34	77	34	666
24-methylcholesterol	617	631	60	222	225	721
24-ethylepicoprostanol	106	*8*	*3*	*11*	*7*	53
stigmasterol	491	200	108	232	89	334
24-ethylcholesterol	2816	3200	343	993	832	1883
24-ethylcholestanol	291	26	*17*	47	*18*	217
total sterols	6671	5794	1281	2690	2241	13692

Italics = Below Lowest standard
Units for results are PPT (based on 1g sample)

Sterols Interpretation Notes:

- The levels of sterols in sample CMB140xx3 are lower than desirable; caution is urged with interpretation of the sterols ratios in this sample.
- The total sterol levels in sample CMB140xx2 is sufficient for interpretation, however the levels of some key sterols are lower than desirable; caution is also urged with interpretation of the sterols ratios in this sample.
- Samples CMB140xx1, CMB140xx5 and CMB140xx6 have sterol profiles consistent with typical human /animal faecal pollution, with both faecal contamination indicators – ratios F1 and F2, reaching to thresholds. Sterol profiles of the remaining three samples are only positive with faecal ratio 2. This can be the case with avian pollution.
- The sterol profile of sample CMB140xx6 is consistent with a human source of faecal contamination. The high ratios observed are consistent with fresh human pollution.
- A ruminant source is suggested for sample CMB140xx1 (two ruminant ratios positive) and more weakly suggested for CMB140xx2 (one ruminant ratios positive).
- There is evidence supporting the presence of plant sterols in these samples.