Table S--- Compare models with the corrected Akaike's Information Criteria for o-Pom.

	Langmuir	Langmuir-Freundlich
Sum-of-squares	22053.49165	5940.915324
Number of data points	9	9
Number of parameters	2	3
Akaike's Information Criteria (corrected, AICc)	81.04	76.43
Probability model is correct	>99.99%	>99.99%
Difference in AICc	4.60	
Information ratio	10.00	

Langmuir-Freundlich has a lower AICc than Langmuir so is more likely to be the correct model.
It is 10.0 times more likely to be correct than *Langmuir*.

Compare models with F test

Model	SS	DF
Langmuir (null)	22053.49165	7
Langmuir-Freundlich (alternative)	5940.915324	6
Difference	16112.576326	1
Percentage Difference	271.21%	16.67%
Ratio (F)	16.27	
P value	0.0068	

If *Langmuir* (the null hypothesis) were true, there would be a 0.68% chance of obtaining results that fit *Langmuir-Freundlich* (the alternative hypothesis) so well.

Since the P value is less than the traditional significance level of 5%, you can conclude that the data fit significantly better to *Langmuir-Freundlich* than to *Langmuir*.

Note that the F test assumes that *Langmuir* is a simpler case of *Langmuir-Freundlich*. If this is not the case, you should ignore the F test results.

Compare models with the corrected Akaike's Information Criteria

	Freundlich	Langmuir-Freundlich
Sum-of-squares	5940.915324	5940.915324
Number of data points	9	9
Number of parameters	2	3
Akaike's Information Criteria (corrected, AICc)	69.23	76.43
Probability model is correct	>99.99%	>99.99%
Difference in AICc	7.20	
Information ratio	36.60	

Freundlich has a lower AICc than Langmuir-Freundlich so is more likely to be the correct model.
It is 36.6 times more likely to be correct than *Langmuir-Freundlich*.

Compare models with F test

The F test is used to compare two nested models. Usually the more complicated model (the one with more parameters) fits better (has a lower SS) than the simpler model. The F test then evaluates the trade-off between better fit, but more complicated model (fewer DF).

For these data, the more complicated model (Langmuir-Freundlich) fits the same (equal SS) as the simpler model (Freundlich). Freundlich is simpler and fits as well. Choose it. You don't need an F test.

Dubinin–Radushkevich	Langmuir-Freundlich	
Sum-of-squares	5940.915324	5940.915324
Number of data points	9	9

Number of parameters	2	3
Akaike's Information Criteria (corrected, AICc)	69.23	76.43
Probability model is correct	>99.99%	>99.99%
Difference in AICc	7.20	
Information ratio	36.60	

Dubinin–Radushkevich has a lower AICc than Langmuir-Freundlich so is more likely to be the correct model.
It is 36.6 times more likely to be correct than *Langmuir-Freundlich*.

Compare models with F test

The F test is used to compare two nested models. Usually the more complicated model (the one with more parameters) fits better (has a lower SS) than the simpler model. The F test then evaluates the trade-off between better fit, but more complicated model (fewer DF).

For these data, the more complicated model (Langmuir-Freundlich) fits the same (equal SS) as the simpler model (Dubinin–Radushkevich). Dubinin–Radushkevich is simpler and fits as well. Choose it. You don't need an F test.

Sips	Baudu	
Sum-of-squares	5940.915324	5940.915324
Number of data points	9	9
Number of parameters	3	4
Akaike's Information Criteria (corrected, AICc)	76.43	88.43
Probability model is correct	>99.99%	0.2473%
Difference in AICc	12.00	

Information ratio	403.43

Sips has a lower AICc than Baudu so is more likely to be the correct model.
It is 403.4 times more likely to be correct than *Baudu*.

Compare models with F test

The F test is used to compare two nested models. Usually the more complicated model (the one with more parameters) fits better (has a lower SS) than the simpler model. The F test then evaluates the trade-off between better fit, but more complicated model (fewer DF).

For these data, the more complicated model (Baudu) fits the same (equal SS) as the simpler model (Sips). Sips is simpler and fits as well. Choose it. You don't need an F test.

Redlich-Peterson	Baudu	
Sum-of-squares	5940.915324	5940.915324
Number of data points	9	9
Number of parameters	3	4
Akaike's Information Criteria (corrected, AICc)	76.43	88.43
Probability model is correct	>99.99%	0.2473%
Difference in AICc	12.00	
Information ratio	403.43	

Redlich-Peterson has a lower AICc than Baudu so is more likely to be the correct model.
It is 403.4 times more likely to be correct than *Baudu*.

Compare models with F test

The F test is used to compare two nested models. Usually the more complicated model (the one with more parameters) fits better (has a lower SS) than the simpler model. The F test then evaluates the trade-off between better fit, but more complicated model (fewer DF).

For these data, the more complicated model (Baudu) fits the same (equal SS) as the simpler model (Redlich-Peterson). Redlich-Peterson is simpler and fits as well. Choose it. You don't need an F test.

Toth	Fritz-Schlunder	
Sum-of-squares	5940.915324	5940.915324
Number of data points	9	9
Number of parameters	3	4
Akaike's Information Criteria (corrected, AICc)	76.43	88.43
Probability model is correct	>99.99%	0.2473%
Difference in AICc	12.00	
Information ratio	403.43	

Toth has a lower AICc than Fritz-Schlunder so is more likely to be the correct model.
It is 403.4 times more likely to be correct than *Fritz-Schlunder*.

Compare models with F test

The F test is used to compare two nested models. Usually the more complicated model (the one with more parameters) fits better (has a lower SS) than the simpler model. The F test then evaluates the trade-off between better fit, but more complicated model (fewer DF).

For these data, the more complicated model (Fritz-Schlunder) fits the same (equal SS) as the simpler model (Toth). Toth is simpler and fits as well. Choose it. You don't need an F test.