

# **Identification Deoxynivalenol and Degradation Products during Maize Germ Oil Refining Process**

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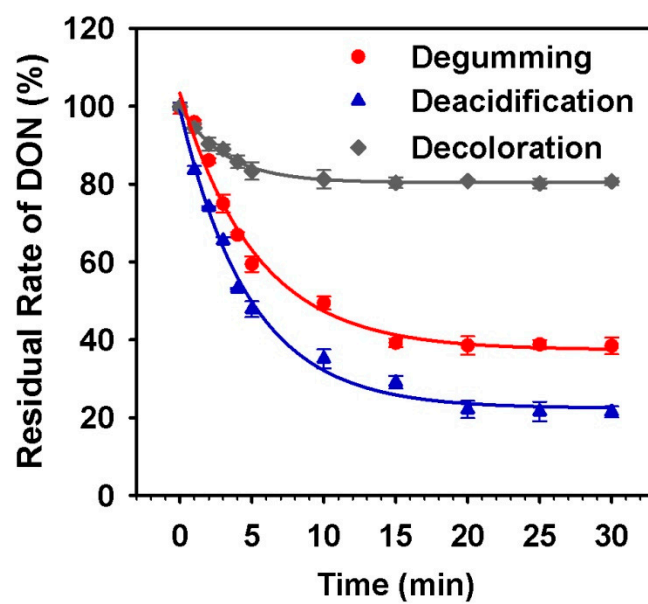
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**Table S1:** The MS/MS data of DON and <sup>13</sup>C-DON.

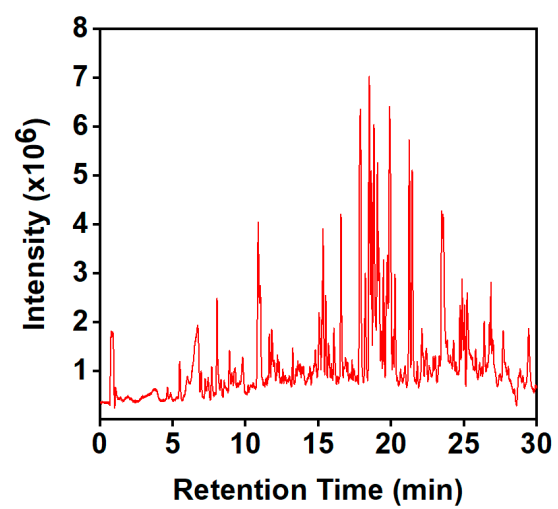
Compound name	Precursor ions	Qualitative ion	Quantitative ion
	(m/z)	(m/z)	(m/z)
DON	295	138	265
<sup>13</sup> C-DON	310	145	279

**Table S2:** The transfer rules of DON during the refining process. The conservation of matter is calculated according to each component produced in the corn germ oil processing shown in Figure 2.

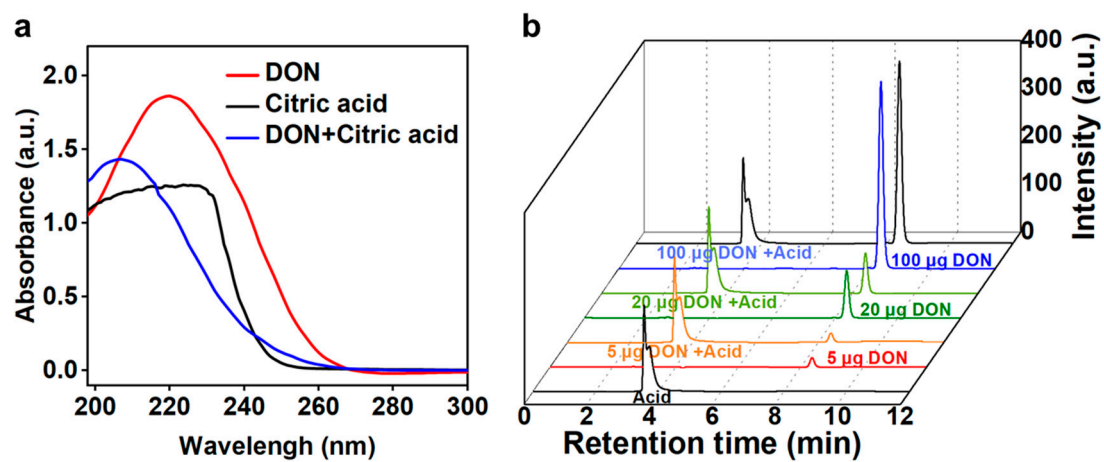
Sample	Name	Concentration of DON (ng/g)	Weight (g)	Total quality of DON (ng)	Percentage (%)
S1	Crude oil	998.3	50.0	49918.7	100.00
S5	Colloidal impurities	1562.5	16.0	24999.3	50.1
-	Total difference	/	/	7617.3	15.2
S2	Degummed oil	346.0	50.0	17302.1	34.7
S6	Saponin	627.6	8.0	5020.7	10.1
S7	Wash Water	61.0	8.0	488.0	1.0
-	Total difference	/	/	10877.6	21.8
S3	Deacidified oil	18.3	50.0	916.0	1.8
S8	Clay	86.0	8.0	688.0	1.4
-	Total difference	/	/	288.0	0.4
S4	Decoloration oil	0.0	50.0	0.0	0.0



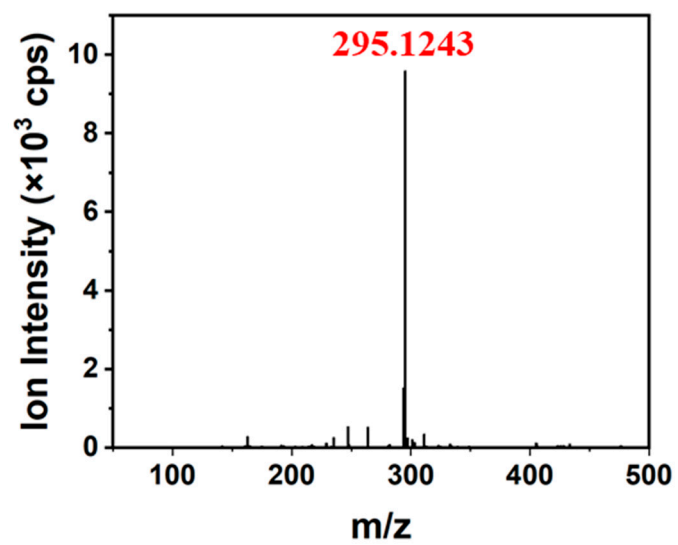
**Figure S1.** The variety of residual rate of DON in different refining processing from 0 to 30 minute.



**Figure S2.** Total-ion chromatogram of germ oil extraction.



**Figure S3** Characterizations of the DON variations in simulated degumming process in aqueous solution. (a) UV-vis absorption spectra of the DON or the solution of acid treatment. (b) HPLC chromatogram spectra of the different amounts DON and the solutions after acid treatment.

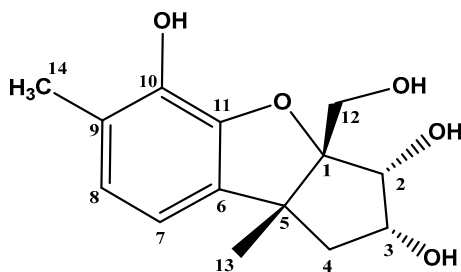


**Figure S4** TOF-MS spectra of DON.

**Table S3:** Assignments of signals for  $^1\text{H}$  NMR,  $^{13}\text{C}$  NMR,  $^1\text{H}$ – $^{13}\text{C}$  HSQC and  $^1\text{H}$ – $^1\text{H}$  COSY of norDON B.

Carbon atom	$\delta_{\text{C}}$	$\delta_{\text{H}}$	$^1\text{H}$ – $^1\text{H}$ COSY	$^1\text{H}$ – $^{13}\text{C}$ HSQC
1	35.00	<i>ND</i>	<i>ND</i>	<i>ND</i>
2	66.92	3.80	H-3	+
3	72.45	4.55	H-2, H-4	+
4	14.84	2.13	H-3	+
5	55.33	<i>ND</i>	<i>ND</i>	<i>ND</i>
6	121.15	<i>ND</i>	<i>ND</i>	<i>ND</i>
7	123.04	6.79	H-8	+
8	114.33	6.67	H-7	+
9	118.09	<i>ND</i>	<i>ND</i>	<i>ND</i>
10	122.51	4.70 (10-OH)	<i>ND</i>	<i>ND</i>
11	114.33	<i>ND</i>	<i>ND</i>	<i>ND</i>
12	45.49	2.00	<i>ND</i>	+
13	21.58	1.39	<i>ND</i>	+
14	12.85	1.37	<i>ND</i>	+
2-OH	<i>ND</i>	2.71	H-2	<i>ND</i>
3-OH	<i>ND</i>	2.67	H-3	<i>ND</i>
12-OH	<i>ND</i>	2.55	<i>ND</i>	<i>ND</i>

Chemical structure of  
norDON B





nordon-b-ncu

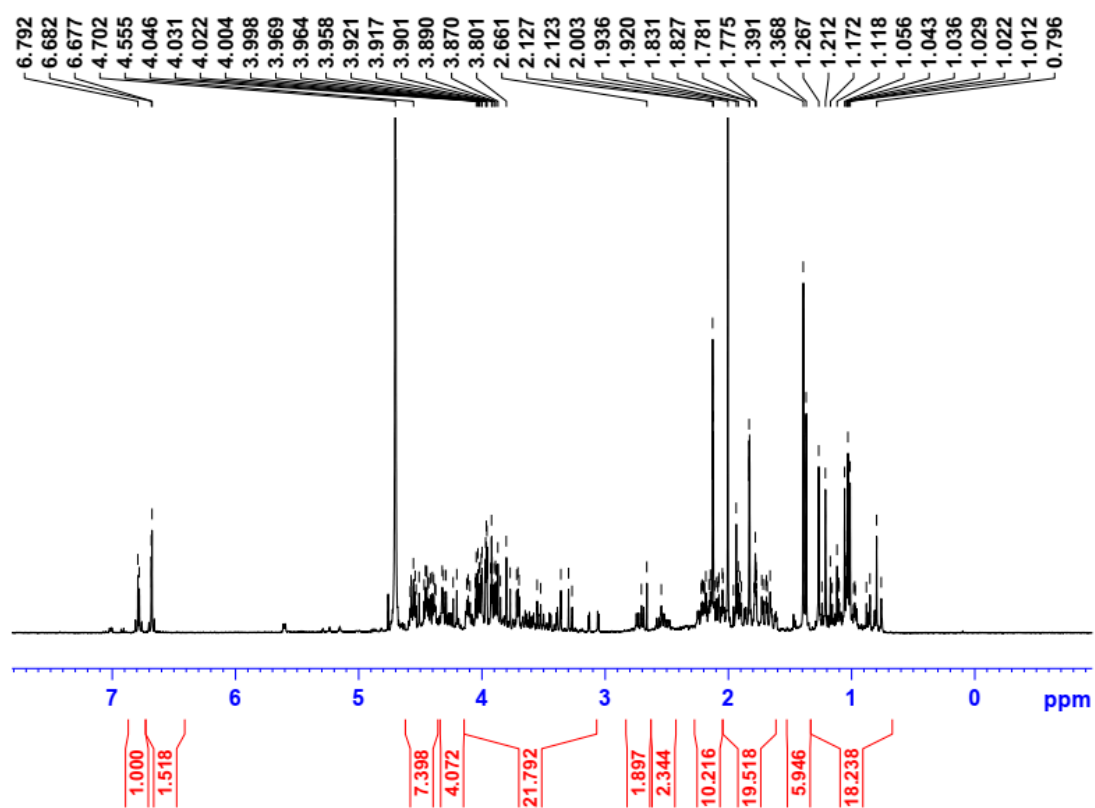
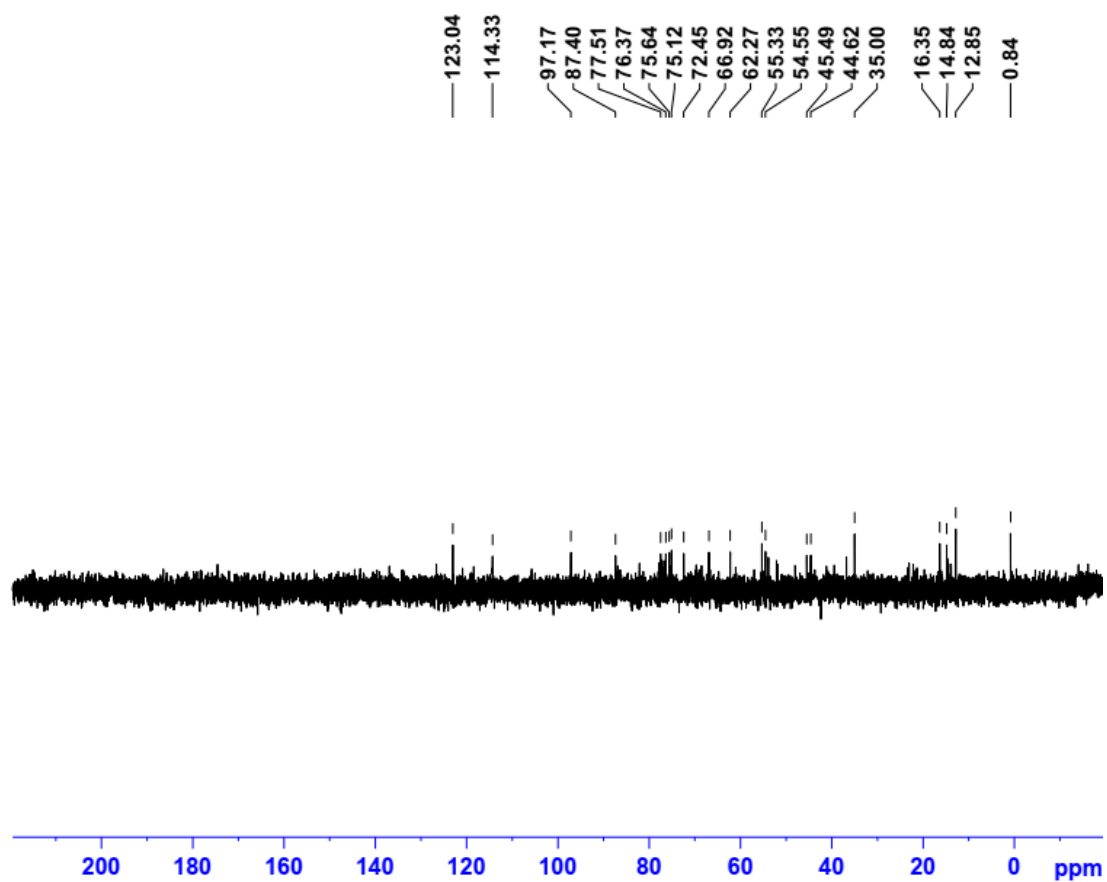


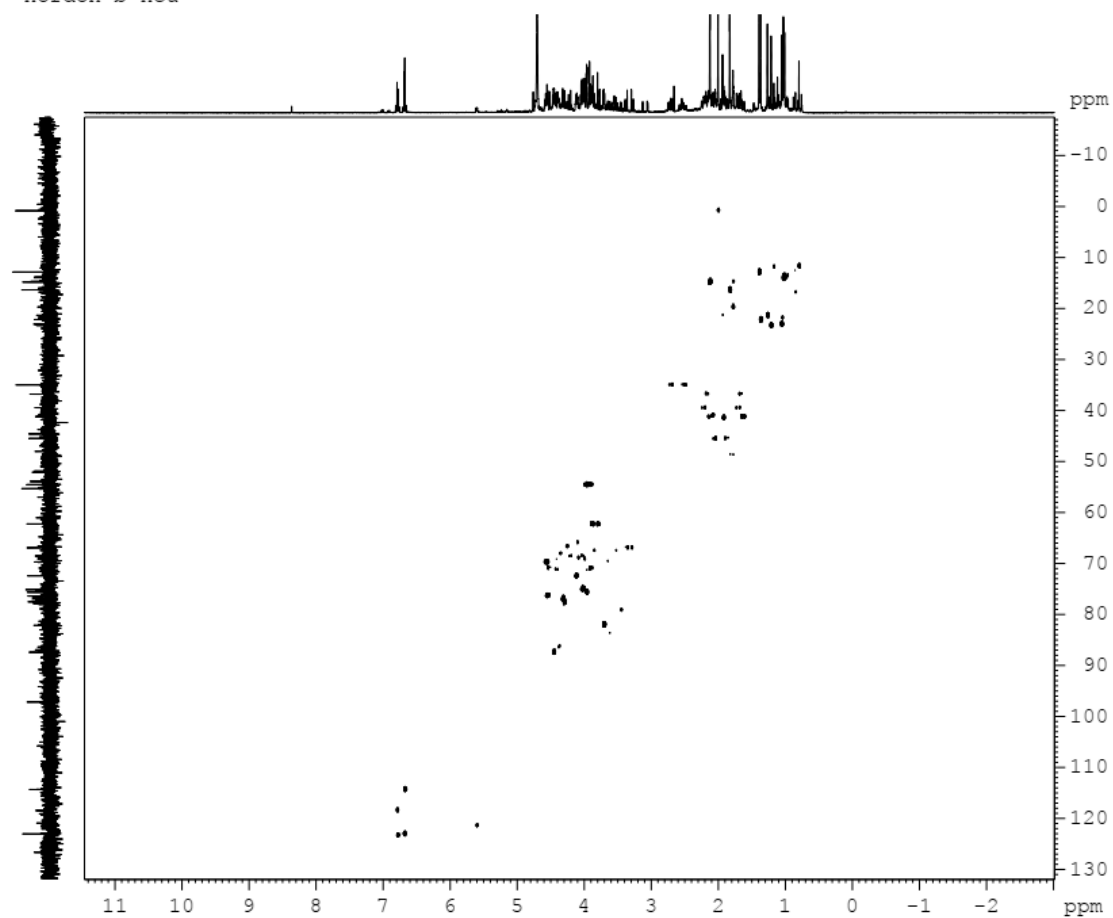
Figure S5.  $^1\text{H}$  NMR spectrum of norDON B.

nordon-b-ncu

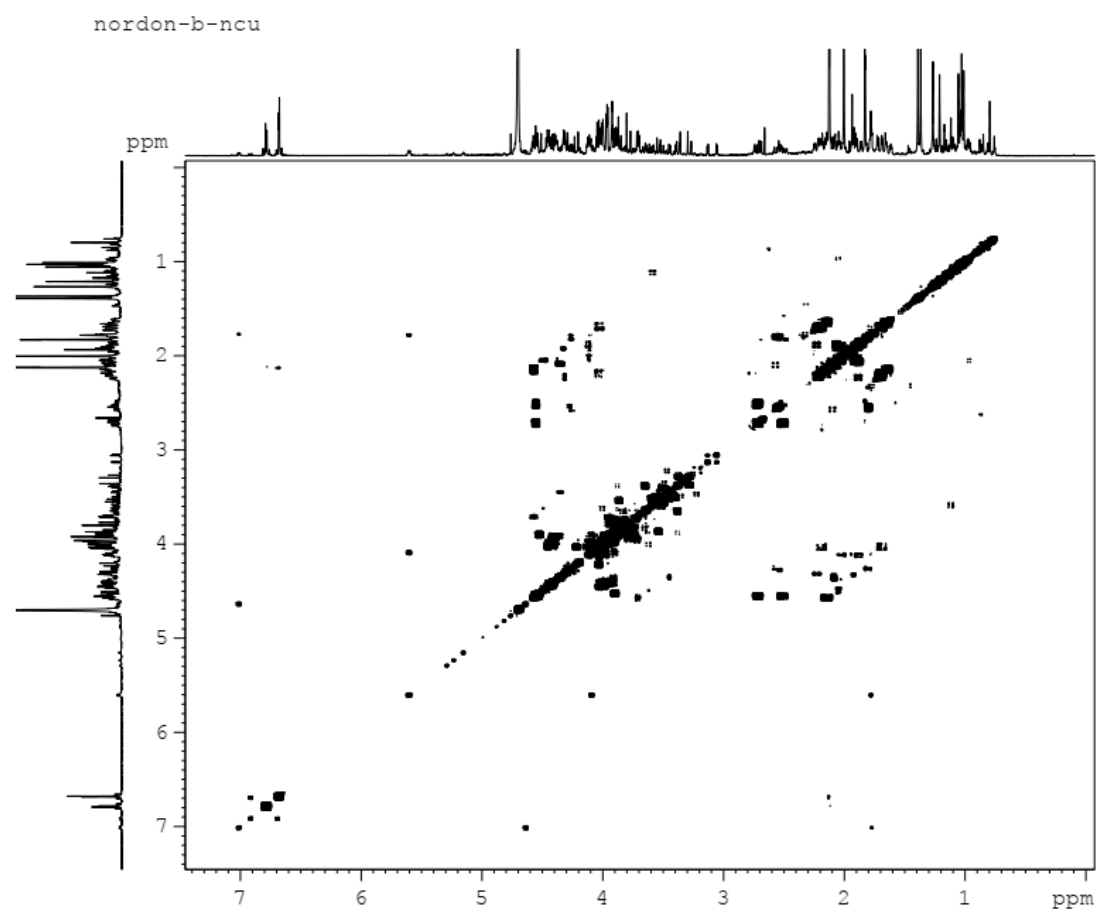


**Figure S6.**  $^{13}\text{C}$  NMR spectrum of norDON B.

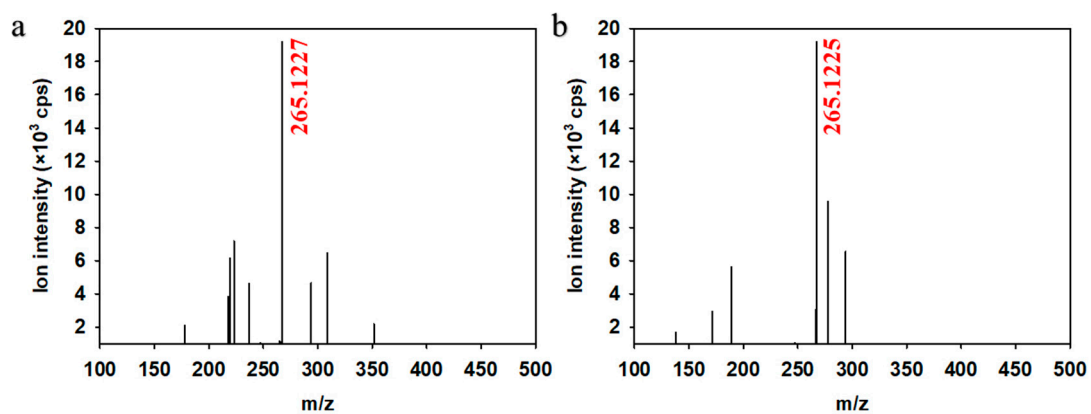
nordon-b-ncu



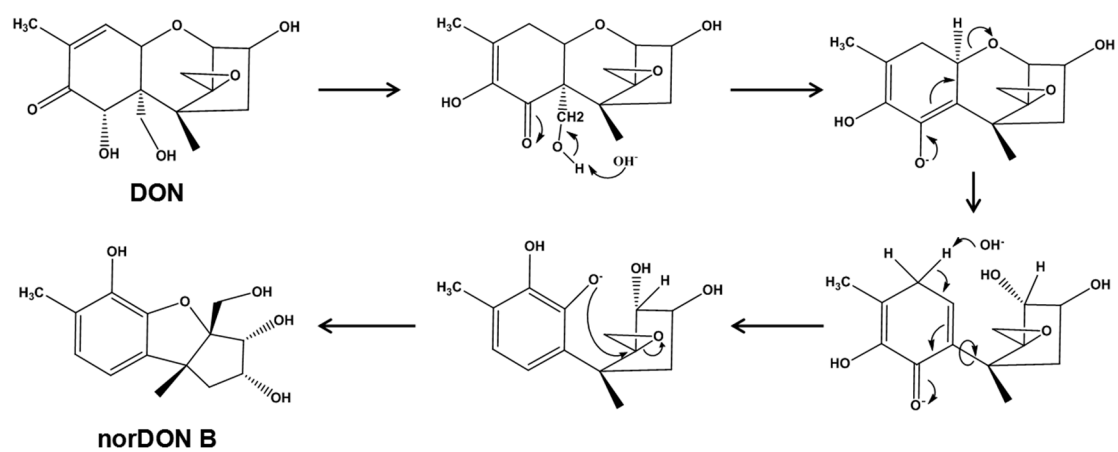
**Figure S7.**  $^1\text{H}$ - $^{13}\text{C}$  HSQC spectrum of norDON B.



**Figure S8.**  $^1\text{H}$ - $^1\text{H}$  COSY spectrum of norDON B.



**Figure S9.** TOF-MS spectra of norDON B detected in saponin (a) and washing water (b).



**Figure S10.** Potential conversion mechanism of DON during alkali neutralization refining process.