**Ginsenoside Rg1 alleviates ulcerative colitis by modulating gut microbiota and microbial tryptophan metabolism**

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**TABLE 1S** | Standard curves and other relevant information of tryptophan and its derivatives

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Substance name | Keep time | Linear equation | Correlation coefficient | Quantitative range | Limit of quantitation |
| Indole-3-carboxaldehyde (IAld) | 8.84 | y=0.795x+0.109 | 0.9929 | 0.0244-25 | 0.0244 |
| 3-Indolepropionic acid (IPA) | 10.12 | y=0.376x+0.0206 | 0.9994 | 0.195-50 | 0.195 |
| Indole-3-lactic acid (ILA) | 8.50 | y=0.0331x-0.0163 | 0.9966 | 0.488-250 | 0.488 |
| Nicotinamide (Nam) | 3.16 | y=0.203x+0.0203 | 0.9981 | 0.122-125 | 0.122 |
| L-Tryptophan (Trp) | 5.43 | y=0.227x+0.0319 | 0.9908 | 0.122-250 | 0.122 |

**TABLE 2S** | Ion pair information for mass spectrometric detection of tryptophan and its derivatives

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Compounds | Q1 | Q3 | DP | EP | CE | CXP |
| Indole-3-carboxaldehyde (IAld) | 146.120 | 117.900 | 71 | 10 | 21 | 10 |
| 3-Indolepropionic acid (IPA) | 189.993 | 130.100 | 66 | 10 | 19 | 12 |
| Indole-3-lactic acid (ILA) | 206.081 | 118.000 | 71 | 10 | 31 | 10 |
| Nicotinamide (Nam) | 123.057 | 80.000 | 76 | 10 | 29 | 6 |
| *L*-Tryptophan (Trp) | 205.037 | 187.900 | 41 | 10 | 15 | 18 |



**FIGURE 1S** | The OTU dilution curve of gut microbiota.



**FIGURE 2S** | The change of gut microbiota after DSS and Rg1 intervention. **(A)** Pan analysis based on OTU level. **(B)** Core analysis based on the OUT level. (**C**) Shannon index shown the change of gut microbiota community richness. **(F)** Hierarchical clustering shows the aggregation of samples in each group.

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**FIGURE 3S** | Rg1 modulated the fecal metabolism in ESI negative ion mode. **(A)** QA analysis result shows the reliability of the data. **(B)** PCA sore plots shows that reflects the distribution of all samples. **(C)** OPLS-DA sore plot reflects the difference between the Control group and the DSS group. **(D)** OPLS-DA sore plot reflects the difference between the DSS group and Rg1 group. **(E)** Volcano map reflects the different specific metabolites between Control group and DSS group. **(F)** Volcano map reflects the different specific metabolites between DSS group and Rg1 group.



**FIGURE 4S** | Pearson correlation plots of three different levels. **(A)** Correlation analysis results between gut microbiota and phenotype. **(B)** Correlation analysis results between tryptophan and its derivatives and phenotype. **(C)** Correlation analysis results between gut microbiota and tryptophan and its derivatives. *P* < 0.05 was considered to be statistically significant. Significance levels are indicated as \**P* < 0.05, \*\**P* < 0.01, and \*\*\**P* < 0.001.