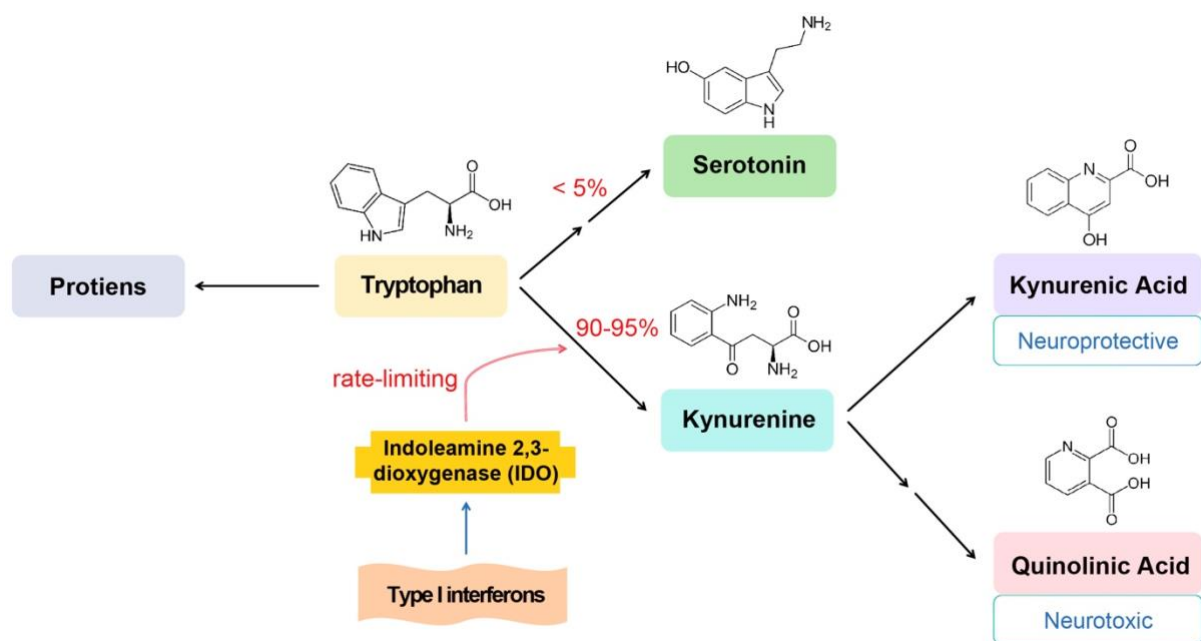


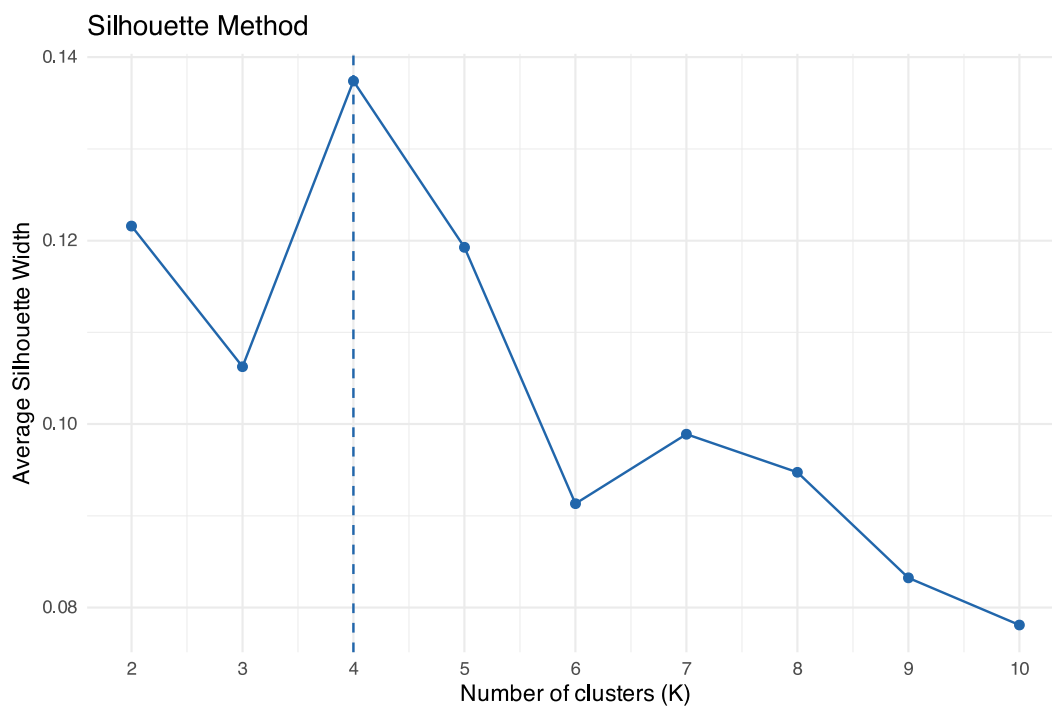
Supplementary Table S1. Clusters by partitioning around medoid cluster analysis

	Cluster1 (n=3)	Cluster2 (n=7)	Cluster3 (n=12)	Cluster4 (n=15)	P value
Categorical variables, n (%)					
Male	0	0	9/11 (81.82)	3/13 (23.08)	<0.001
Anti-TIF1 γ	0	5/6 (83.33)	0	0	<0.001
Continuous variables, median (IQR)					
Kynurenine	4.96 (4.42-5.2)	2.09 (1.95-2.24)	3.12 (2.4-3.2)	2.11 (1.89-2.26)	<0.001
CDASI (0-100)	0 (0-0.5)	5 (3.5-6.5)	1 (0.75-4.25)	0 (0-1)	0.003
Aldolase (1-7U/L)	7 (6.5-8)	4 (4-5)	4 (3-4.25)	4 (2.5-4)	0.007
CRP (<0.8mg/L)	1 (0.9-1.1)	0.8 (0.8-0.8)	0.8 (0.8-0.8)	0.8 (0.8-0.8)	0.008
ESR (<20mm/h)	18 (18-18.5)	9.5 (8.25-9.5)	9.75 (9.5-14.75)	9.5 (6-9.5)	0.013
KYN/TRP ratio	0.11 (0.1-0.13)	0.05 (0.04-0.06)	0.06 (0.05-0.07)	0.05 (0.05-0.06)	0.024
QUIN/KA ratio	27.82 (26.81-33.81)	23.06 (20.69-24.05)	16.83 (14.1-18.76)	15.89 (11.83-20.16)	0.042
Disease duration (year)	12.5 (11.71-13.46)	2.08 (1.38-4.29)	1.83 (0.21-5)	3.67 (2.5-7.5)	0.049
PGA (0-10)	0 (0-1.5)	2 (0.5-3)	1 (0.88-2.25)	0 (0-1)	0.065
Quinolinic Acid	1.88 (1.85-2.66)	1.42 (0.97-1.53)	1.17 (1.01-1.22)	1.22 (1-1.36)	0.079
Age	16.67 (14.73-16.8)	7.53 (5.89-10.61)	10.96 (7.62-12.97)	12.2 (11.9-14.84)	0.085
Tryptophan	36.09 (34.89-50.18)	44.08 (41.76-51.06)	47.19 (43.96-54.89)	39.63 (35.86-48.34)	0.272
CK (20-215U/L)	160 (114.5-223.5)	120 (98-124.5)	98 (67.25-148.25)	98 (76.5-100.5)	0.504

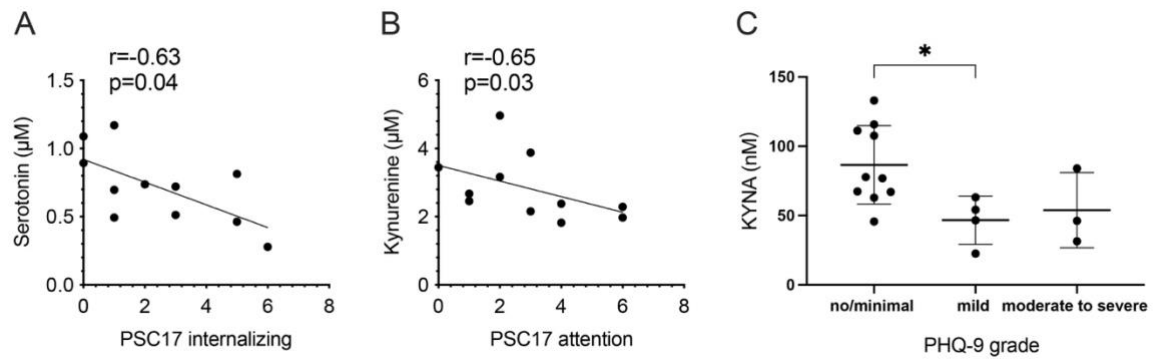
Anti-TIF1 γ antibodies; CDASI, cutaneous dermatomyositis disease area and severity index; CRP, C-reactive protein; ESR, erythrocyte sedimentation rate; KYN/TRP ratio, Kynurenine/Tryptophan ratio; QUIN/KA ratio, Quinolinic acid/Kynurenic acid ratio; PGA, physician global assessment; CK, creatine kinase.



Supplementary Figure S1. Schematic representation of the Tryptophan metabolic pathway.

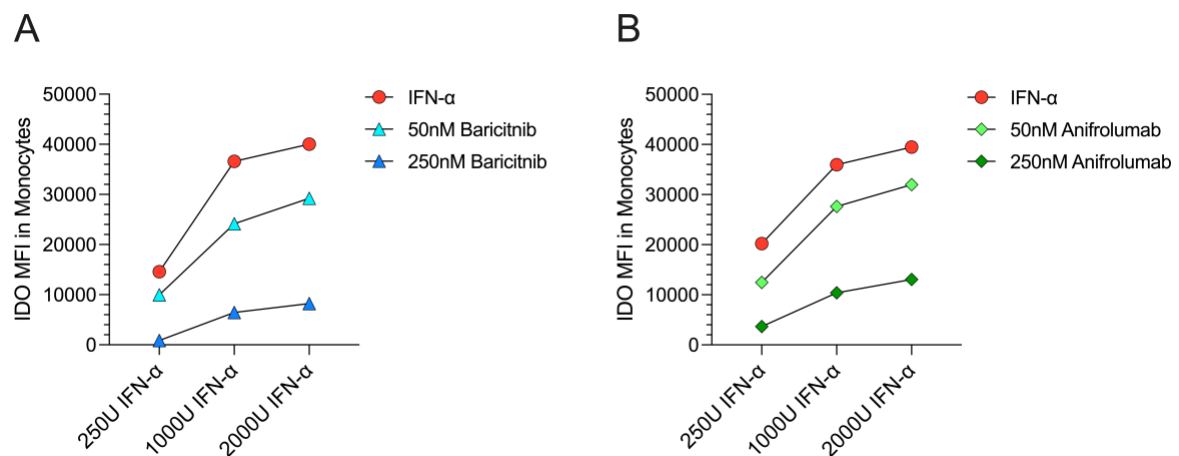


Supplementary Figure S2. The optimal number of clusters using the silhouette method based on Gower distance.



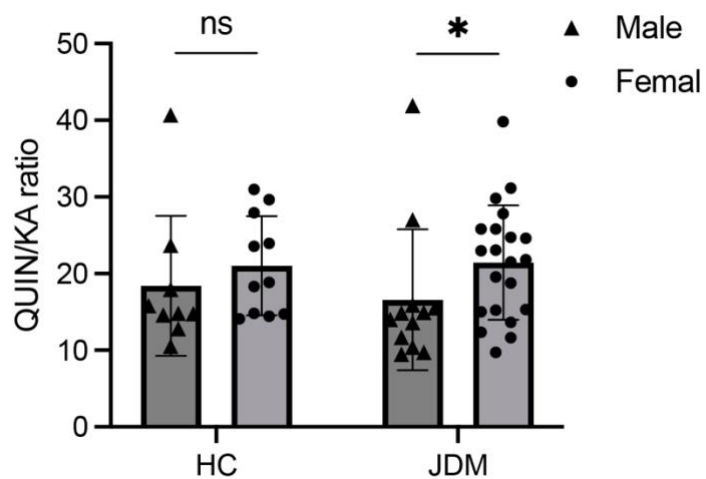
Supplementary Figure S3. Correlations and comparison between Tryptophan metabolites and subgroups of mental health grades.

Correlations between (A) serotonin with pediatric symptom checklist-17 internalizing score (PSC-17 internalizing) and (B) kynurenine with PSC-17 attention score. (C) Kynurenic acid levels in different grades of patient health questionnaire-9 (PHQ-9) depression score. * $p<0.05$.



Supplementary Figure S4. Inhibitory effects of different concentrations of baricitinib and anifrolumab on IFN- α -induced IDO expression in monocytes.

(A) Ability of 50nM and 250nM baricitinib to reduce IDO expression in monocytes activated with 250U, 1000U, and 2000U IFN- α . (B) Ability of 50nM and 250nM anifrolumab to reduce IDO expression in monocytes activated with 250U, 1000U, and 2000U IFN- α .



Supplementary Figure S5. Comparison of the QUIN/KA ratio between females and males in healthy controls and JDM patients. *p<0.05.