

# Dietary Supplements in OA: Real Opportunity or Utopia?

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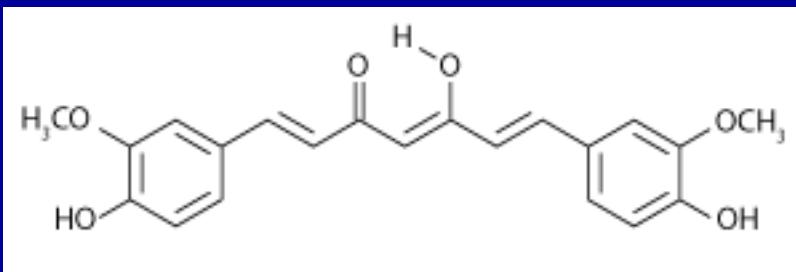


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**Nottingham**



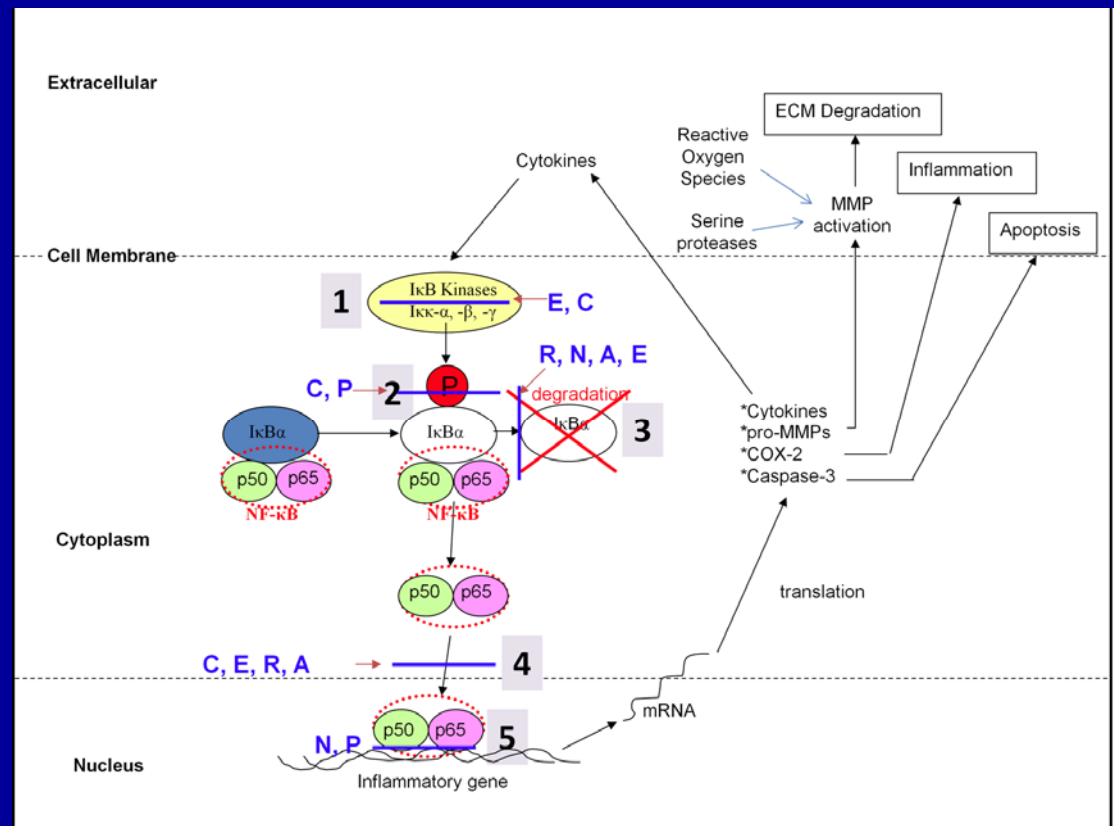
# Curcumin - Diferuloylmethane

- Curcumin is one of three curcuminoids obtained by solvent extraction from dried turmeric roots
- Used globally for food coloring. It has potent antioxidant, anti-inflammatory, antiviral and antifungal properties
- It exerts anti-inflammatory activity by inhibition of a number of different molecules and pathways that play an important role in inflammation (i.e. NF- $\kappa$ B)

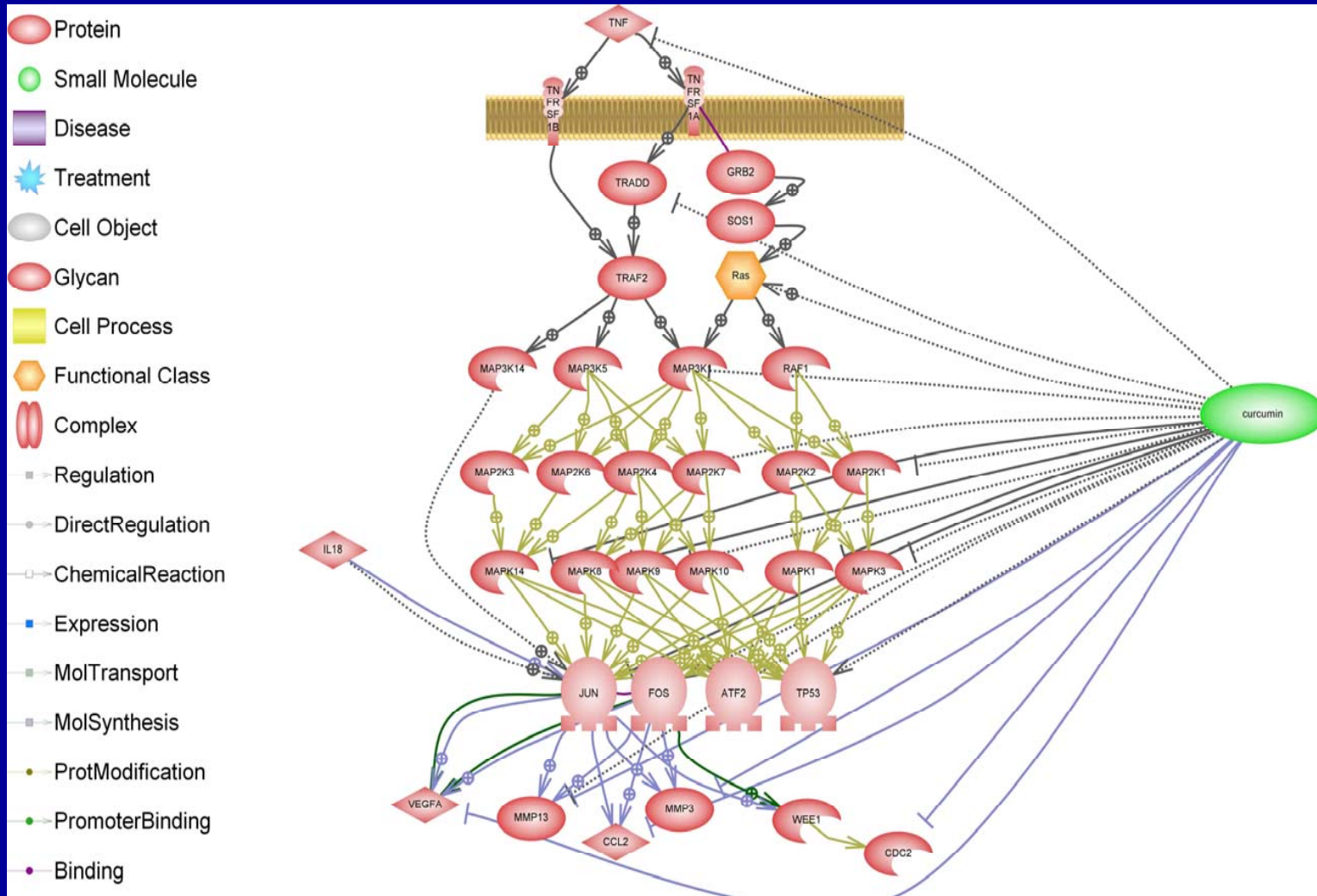


# The Curcumin/AP-1/NF- $\kappa$ B Axis in Inflammatory Responses in Joint Cells

- Naturally occurring plant-derived compounds such as curcumin can modulate NF- $\kappa$ B activity without undesired systemic effects

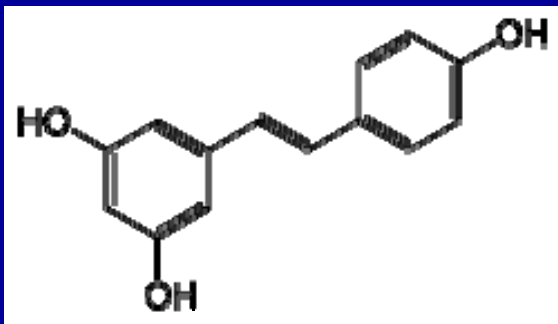


# Effects of Curcumin on TNF- $\alpha$ Signaling

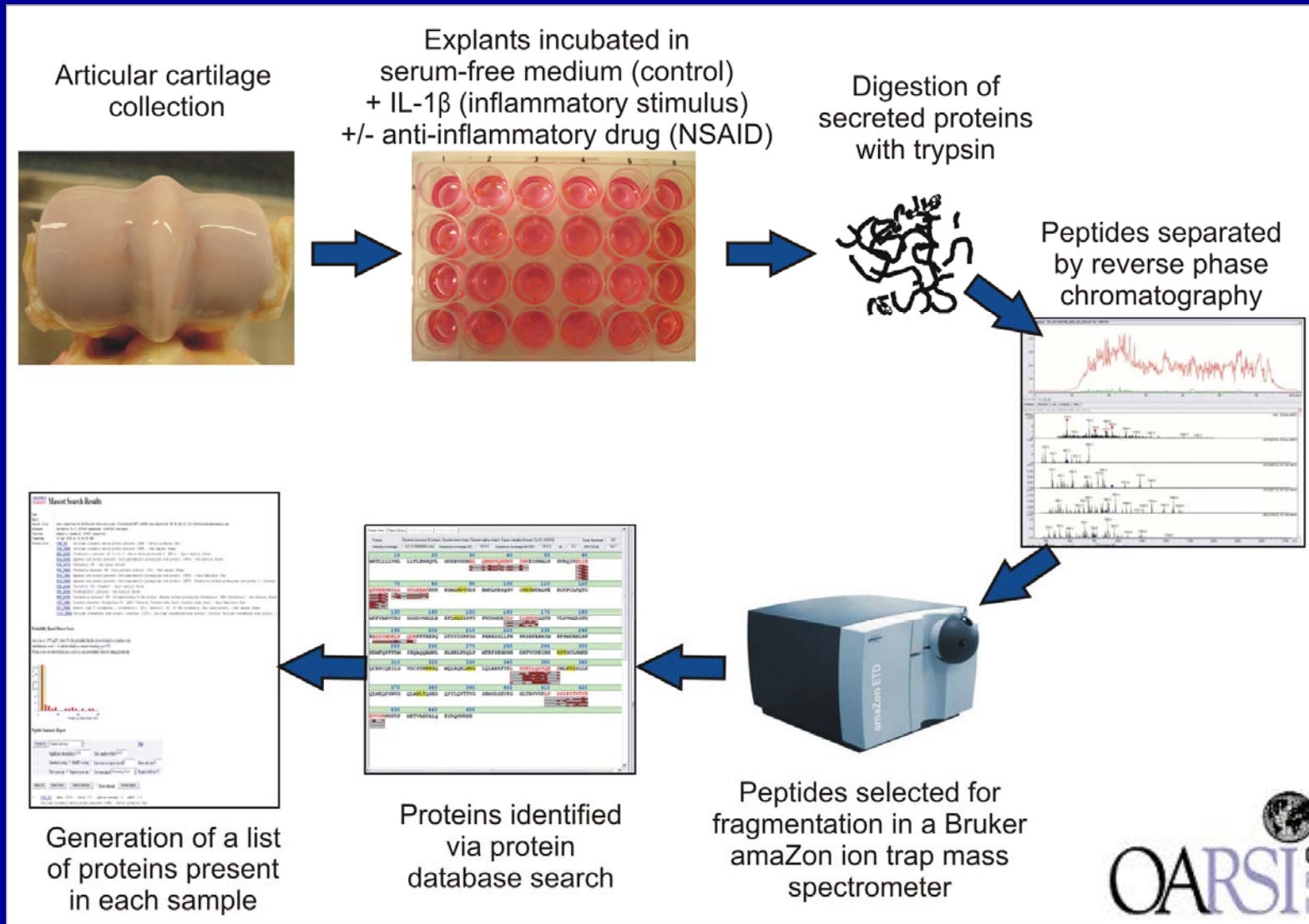


# Resveratrol - Trans-3,5,4'-trihydroxystilbene

- Flavonol belonging to the group of flavonoids
- Produced by plants as a defence against fungal disease
- Antioxidant but weaker than quercetin and epicatechin
- Present in many plants and fruits, including red grapes (and red wine), eucalyptus, spruce, blueberries, mulberries, peanuts, giant Japanese knotweed



# High-Throughput Proteomic Study of the Cartilage Secretome





# Commonly Identified Proteins: Canine Cartilage Secretome

Protein name	Entry	Score	Number of peptides	Description
COMP isoform 1	<a href="#">gi 73985933</a>	1339	83	Structural integrity of ECM
Fibronectin 1 isoform 1	<a href="#">gi 74005698</a>	1326	43	Matrix organisation
Aggrecan core protein precursor	<a href="#">gi 12644429</a>	1122	120	Regulatory protein within the ECM
CHAD	<a href="#">gi 73966365</a>	470	15	Regulatory protein
MMP-3	<a href="#">gi 50950195</a>	500	21	Fibronectin degradation
Clusterin	<a href="#">gi 50979240</a>	451	11	Associated with cell death
Decorin	<a href="#">gi 50979008</a>	310	16	Fibril formation within ECM
TSP-4	<a href="#">gi 311626</a>	244	14	Cell-to-matrix interactions
CILP-1	<a href="#">gi 74000887</a>	186	6	Cartilage organisation
Biglycan	<a href="#">gi 50979010</a>	215	7	Collagen fibre assembly

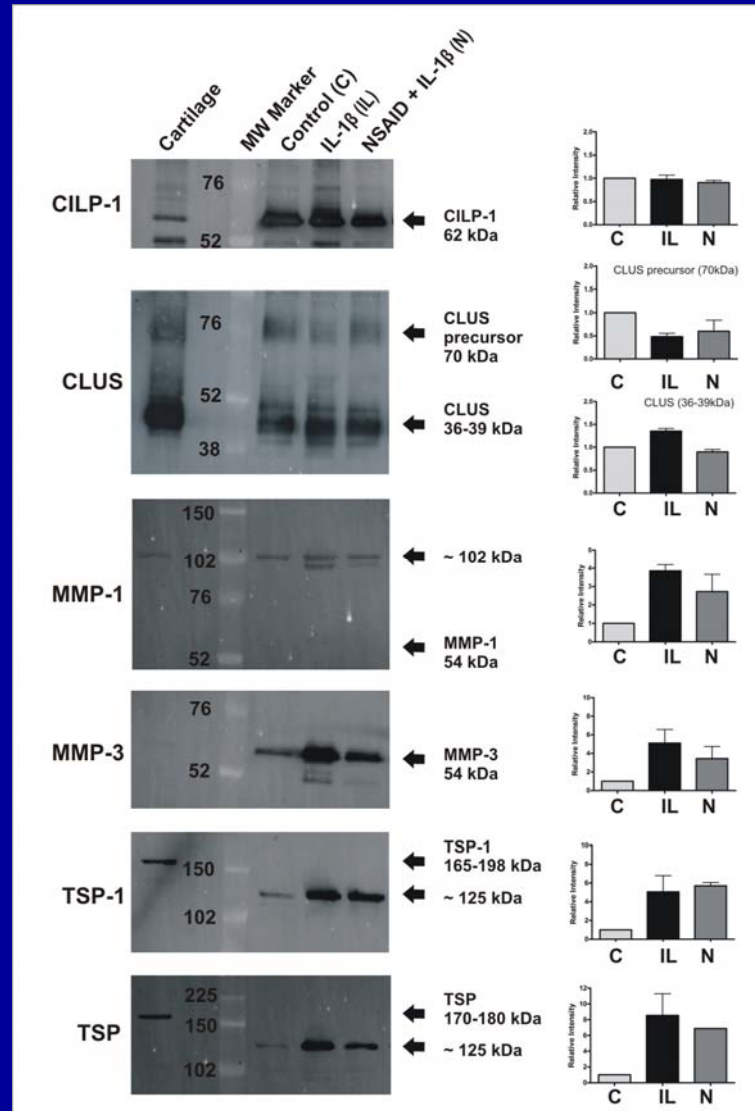
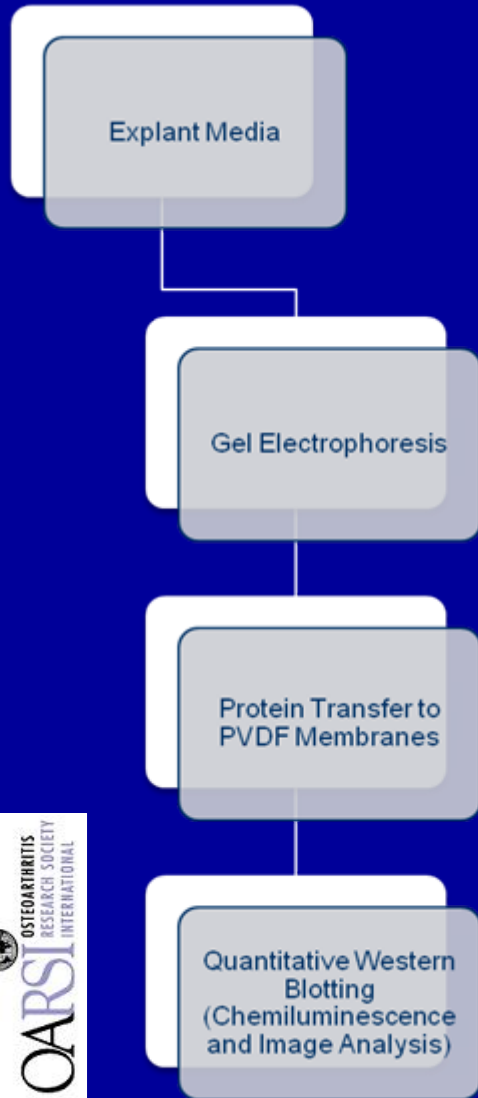
Poster 121  
Hillier et al.,  
OARSI 2010

# Commonly Identified Proteins: Equine Cartilage Secretome

Protein name	Species matched	Accession number	Swiss-Prot entry	Mascot Score	Sequence Coverage (%)	No. of peptides
<b>Fibronectin</b>	Mouse, Cow, Rat, Horse	P07589	FINC_BOVIN	642	9	16
<b>Cartilage Oligomeric Matrix Protein</b>	Human, Mouse, Cow, Rat	Q9R0G6	COMP_MOUSE	554	16	11
<b>Matrix-Metalloproteinase-3</b>	Horse	Q28397	MMP3_HORSE	366	19	11
<b>Aggrecan Core Protein</b>	Human, Mouse, Rat, Pig, Dog	P16112	PGCA_HUMAN	353	3	8
<b>Clusterin</b>	Horse, Dog	Q29482	CLUS_HORSE	318	14	5
<b>Thrombospondin-1</b>	Human, Mouse, Cow	P07996	TSP1_HUMAN	227	5	6
<b>Matrix-Metalloproteinase-1</b>	Horse, Cow	Q9XSZ5	MMP1_HORSE	227	10	5
<b>Fibronectin</b>	Mouse, Cow, Rat, Horse	Q28377	FINC_HORSE	221	11	3
<b>Chondroadherin</b>	Human, Mouse, Cow, Rat	O15335	CHAD_HUMAN	220	13	4
<b>Biglycan</b>	Horse, Cow	O46403	PGS1_HORSE	183	13	4
<b>Decorin</b>	Human, Horse, Cow, Rat, Dog, Rabbit	O46542	PGS2_HORSE	156	10	3
<b>Cartilage Intermediate Layer Protein-1</b>	Human, Mouse, Pig	O75339	CILP1_HUMAN	99	2	3
<b>Prolargin precursor</b>	Human, Mouse	P51888	PRELP_HUMAN	96	3	1
<b>TNF receptor 11B precursor</b>	Mouse	O08712	TR11B_MOUSE	87	3	1
<b>Fibromodulin</b>	Human, Mouse, Cow, Rat, Horse	P50609	FMOD_RAT	82	8	3



# Western Blot Validation



Poster 503  
Clutterbuck et al.,  
OARSI 2010