

**A double-blind, randomized, placebo-controlled trial to  
evaluate the efficacy of a hydrolyzed chicken collagen type II  
supplement in alleviating joint discomfort**

Mohammed A. and He S.

**Supplementary Materials**

**Table S1.** WOMAC sub-score change at week 8 in the stiffness domain, stratified by the severity of stiffness at baseline.

<b>Baseline stiffness</b> <sup>1,2</sup>	<b><math>\beta</math> Coefficient</b> <sup>3</sup>	<b>(90% CI)</b>	<b>(95% CI)</b>	<b>p-value</b> <sup>4</sup>
Pooled (n = 89)	-26.9	(-47.3, -6.5)	(-51.0, -2.9)	0.031
Severe (n = 26)	-5.7	(-32.3, 20.9)	(-36.1, 24.8)	0.718
Non-severe (n = 63)	-34.9	(-61.4, -8.4)	(-66.0, -3.8)	0.032

<sup>1</sup> Baseline stiffness dichotomization: within the stiffness domain, if the participant answered severe (3) or extreme (4) to any of the questions were considered having “severe” stiffness at baseline, otherwise non-severe

<sup>2</sup>For this set of analysis, no outlier was removed

<sup>3</sup>  $\beta$  Coefficient and confidence intervals obtained from least squares regression analysis; the values were AVC-H2 group minus placebo group.

<sup>4</sup> P-value was based on *F*-test in linear regression models. Two-tailed p-value *a priori* set at 0.05

Abbreviations: AVC-H2, Avicenna’s Hydrolyzed Chicken Collagen Type II; CI, confidence interval; WOMAC, The Western Ontario and McMaster Universities Arthritis Index survey

**Table S2.** WOMAC overall score from baseline to follow-up weeks, after removing non-compliant participants.

Time point	Measurement <sup>1</sup>	Placebo <sup>2</sup>	AVC-H2 <sup>2</sup>	$\beta$ Coefficient <sup>3</sup>	p-value <sup>4</sup>
		(mean $\pm$ SD)	(mean $\pm$ SD)	(95% CI)	
Baseline	Raw score	30.1 $\pm$ 17.7	29.6 $\pm$ 16.2	---	0.889
Week 4	Raw score	25.2 $\pm$ 19.8	19.7 $\pm$ 15.3	---	0.185
	% $\Delta$	-16.2 $\pm$ 51.3	-38.0 $\pm$ 38.1	-21.8 (-41.9, -1.7)	0.045
Week 8	Score	20.4 $\pm$ 19.5	16.3 $\pm$ 15.1	---	0.318
	% $\Delta$	-33.2 $\pm$ 46.5	-48.0 $\pm$ 41.7	-14.8 (-34.7, 5.1)	0.155

<sup>1</sup> Raw score obtained from the WOMAC questionnaire; % $\Delta$  calculated as the difference between baseline and follow-up score, divided by baseline score, and presented in percentage format.

<sup>2</sup> Two participants removed from this set of analysis, 1 in each group, both due to implausible % $\Delta$  value.

<sup>3</sup>  $\beta$  Coefficient and confidence intervals obtained from least squares regression analysis; the values were HC group minus placebo group.

<sup>4</sup> P-value was based on one of the following methods, where appropriate: Student's *t*-test for continuous variables with normal distribution; Mann Whitney *U* test for continuous variables with non-normal distribution. Two-tailed p-value *a priori* set at 0.05

Abbreviations: AVC-H2, Avicenna's Hydrolyzed Chicken Collagen Type II; CI, confidence interval; SD, standard deviation; WOMAC, The Western Ontario and McMaster Universities Arthritis Index survey

**Table S3.** WOMAC sub-score in the pain domain from baseline to follow-up weeks, after removing non-compliant participants.

Time point	Measurement <sup>1</sup>	Placebo <sup>2</sup>	AVC-H2 <sup>2</sup>	$\beta$ Coefficient <sup>3</sup>	p-value <sup>4</sup>
		(mean $\pm$ SD)	(mean $\pm$ SD)	(95% CI)	
Baseline	Raw score	6.8 $\pm$ 3.9	6.1 $\pm$ 3.6	---	0.422
Week 4	Raw score	5.1 $\pm$ 4.1	4.2 $\pm$ 3.4	---	0.301
	% $\Delta$	-13.9 $\pm$ 60.4	-31.8 $\pm$ 57.7	-12.5 (-39.2, 14.2)	0.366
Week 8	Score	4.4 $\pm$ 4.3	3.3 $\pm$ 3.3	---	0.258
	% $\Delta$	-33.1 $\pm$ 54.7	-45.9 $\pm$ 48.4	-12.8 (-36.1, 10.4)	0.291

<sup>1</sup> Raw score obtained from the WOMAC questionnaire; % $\Delta$  calculated as the difference between baseline and follow-up score, divided by baseline score, and presented in percentage format.

<sup>2</sup> Two participants removed from this set of analysis, 1 in each group, both due to incalculable % $\Delta$  (baseline score was 0 in this domain)

<sup>3</sup>  $\beta$  Coefficient and confidence intervals obtained from least squares regression analysis; the values were collagen group minus placebo group.

<sup>4</sup> P-value was based on one of the following methods, where appropriate: Student's *t*-test for continuous variables with normal distribution; Mann Whitney U test for continuous variables with non-normal distribution. Two-tailed p-value *a priori* set at 0.05

Abbreviations: AVC-H2, Avicenna's Hydrolyzed Chicken Collagen Type II; CI, confidence interval; SD, standard deviation; WOMAC, The Western Ontario and McMaster Universities Arthritis Index survey

**Table S4.** WOMAC sub-score in the stiffness domain from baseline to follow-up weeks, after removing non-compliant participants.

Time point	Measurement <sup>1</sup>	Placebo <sup>2</sup>	AVC-H2 <sup>2</sup>	$\beta$ Coefficient <sup>3</sup>	p-value <sup>4</sup>
		(mean $\pm$ SD)	(mean $\pm$ SD)	(95% CI)	
Baseline	Raw score	4.3 $\pm$ 2.0	4.8 $\pm$ 1.8	---	0.262
Week 4	Raw score	3.8 $\pm$ 2.4	3.1 $\pm$ 2.1	---	0.200
	% $\Delta$	-9.6 $\pm$ 52.5	-36.9 $\pm$ 42.4	-27.3 (-48.6, -6.0)	0.018
Week 8	Score	3.2 $\pm$ 2.4	2.6 $\pm$ 2.1	---	0.293
	% $\Delta$	-21.3 $\pm$ 52.9	-44.4 $\pm$ 44.5	-23.1 (-45.0, -1.1)	0.048

<sup>1</sup> Raw score obtained from the WOMAC questionnaire; % $\Delta$  calculated as the difference between baseline and follow-up score, divided by baseline score, and presented in percentage format.

<sup>2</sup> One participant removed from this set of analysis in HC group, due to incalculable % $\Delta$  (baseline score was 0 in this domain).

<sup>3</sup>  $\beta$  Coefficient and confidence intervals obtained from least squares regression analysis; the values were HC group minus placebo group.

<sup>4</sup> P-value was based on one of the following methods, where appropriate: Student's *t*-test for continuous variables with normal distribution; Mann Whitney U test for continuous variables with non-normal distribution. Two-tailed p-value *a priori* set at 0.05

Abbreviations: AVC-H2, Avicenna's Hydrolyzed Chicken Collagen Type II; CI, confidence interval; SD, standard deviation; WOMAC, The Western Ontario and McMaster Universities Arthritis Index survey

**Table S5.** WOMAC sub-score in the difficulty in physical activities domain from baseline to follow-up weeks, after removing non-compliant participants.

Time point	Measurement <sup>1</sup>	Placebo <sup>2</sup>	AVC-H2 <sup>2</sup>	$\beta$ Coefficient <sup>3</sup>	p-value <sup>4</sup>
		(mean $\pm$ SD)	(mean $\pm$ SD)	(95% CI)	
Baseline	Raw score	19.0 $\pm$ 12.8	18.7 $\pm$ 11.7	---	0.903
Week 4	Raw score	16.3 $\pm$ 14.2	12.4 $\pm$ 10.8	---	0.184
	% $\Delta$	-14.1 $\pm$ 60.1	-41.2 $\pm$ 37.7	-27.1 (-49.3, -4.9)	0.029
Week 8	Score	12.9 $\pm$ 13.7	10.3 $\pm$ 10.5	---	0.378
	% $\Delta$	-33.8 $\pm$ 49.5	-48.2 $\pm$ 48.3	-14.5 (-36.8, 7.9)	0.211

<sup>1</sup> Raw score obtained from the WOMAC questionnaire; % $\Delta$  calculated as the difference between baseline and follow-up score, divided by baseline score, and presented in percentage format.

<sup>2</sup> Three participants removed from this set of analysis, 1 in the HC group and 2 in the placebo group, due to implausible % $\Delta$  value and incalculable % $\Delta$  (baseline score was 0 in this domain).

<sup>3</sup>  $\beta$  Coefficient and confidence intervals obtained from least squares regression analysis; the values were HC group minus placebo group.

<sup>4</sup> P-value was based on one of the following methods, where appropriate: Student's *t*-test for continuous variables with normal distribution; Mann Whitney U test for continuous variables with non-normal distribution. Two-tailed p-value *a priori* set at 0.05

Abbreviations: AVC-H2, Avicenna's Hydrolyzed Chicken Collagen Type II; CI, confidence interval; SD, standard deviation; WOMAC, The Western Ontario and McMaster Universities Arthritis Index survey

**Table S6.** VAS pain assessment scale from baseline to follow-up weeks, after removing non-compliant participants.

Time point	Measurement <sup>1</sup>	Placebo <sup>2</sup>	AVC-H2 <sup>2</sup>	$\beta$ Coefficient <sup>3</sup>	p-value <sup>4</sup>
		(mean $\pm$ SD)	(mean $\pm$ SD)	(95% CI)	
Baseline	Raw score	5.2 $\pm$ 1.4	5.3 $\pm$ 1.3	---	0.712
Week 4	Raw score	3.7 $\pm$ 2.2	2.8 $\pm$ 1.8	---	0.070
	% $\Delta$	-30.6 $\pm$ 32.2	-43.9 $\pm$ 35.3	-13.3 (-28.6, 2.1) <sup>5</sup>	0.090
Week 8	Score	3.2 $\pm$ 2.3	2.2 $\pm$ 1.9	---	0.062
	% $\Delta$	-39.8 $\pm$ 33.7	-54.6 $\pm$ 37.0	-14.8 (-30.9, 1.3) <sup>6</sup>	0.071

<sup>1</sup> Raw score obtained from the VAS scale; % $\Delta$  calculated as the difference between baseline and follow-up score, divided by baseline score, and presented in percentage format.

<sup>2</sup> One participant removed from this set of analysis in the HC group, due to implausible % $\Delta$  value.

<sup>3</sup>  $\beta$  Coefficient and confidence intervals obtained from least squares regression analysis; the values were HC group minus placebo group.

<sup>4</sup> P-value was based on one of the following methods, where appropriate: Student's *t*-test for continuous variables with normal distribution; Mann Whitney U test for continuous variables with non-normal distribution. Two-tailed p-value *a priori* set at 0.05

<sup>5</sup> Significant at 90%CI level (-26.3, -0.2).

<sup>6</sup> Significant at 90%CI level (-28.4, -1.1).

Abbreviations: AVC-H2, Avicenna's Hydrolyzed Chicken Collagen Type II; CI, confidence interval; SD, standard deviation; VAS, Visual Analogue Scale.