EVALUATION OF ACUTE EFFECTS OF COFFEE CONSUMPTION ON ARTERIAL STIFFNESS IN HEALTHY ADULT PEOPLE USING AN OSCILLOMETRIC DEVICE.

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BACKGROUND

Several studies in different populations and conditions shown contradictory results about the effect of coffee on arterial stiffness (AS). Coffee consumption is high around the world and it is very important to define its CV effects.

OBJECTIVE

To evaluate the acute effects on haemodynamic parameters and AS, after consumption of regular coffee or, decaffeinated coffee.

METHODS

In a prospective, self controlled cohort study, we included 32 healthy p. (46.2±10.4y.o., 16 men (53.5±18) and 16 women (43.0±21)(p=0,186)).

Fourteen regular coffee consumers (87.5%) (p=NS). Haemodynamic parameters and AS were assessed non invasively using oscillometric Arteriograph® (TensioMed Budapest, Hungary Ltd.).

Each subejct received 14 gr. of excelso coffee (151.2 mg caffeine) and two weeks apart, 14 gr of decaf coffee (3.92 mg) in random order.

Baseline, 30 and 60 min parameters are reported.

RESULTS USING REGULAR COFEE

Variable	Baseline	30´	Δ	P Value	60´	Δ	P Value
SBP B (mmHg)*	118.28 ± 10.6	122.16 ± 10.8	3.88	0.013	122.09 ± 11.8	3.81	0.002
DBP B (mmHg)*	74.59 ± 8.5	78.69 ± 7.9	4.09	0.001	77.75 ± 9.3	3.16	0.003
PP B (mmHg)*	43.5 (8.0)	41.5 (8.3)	-2.00	0.536	44.0 (8.3)	0.50	0.455
MAP (mmHg)*	89.22 ± 9.0	93.22 ± 8.5	4.00	< 0.001	92.53 ± 9.9	3.31	0.001
HR (beats/min)*	56.88 ± 9.6	53.69 ± 8.4	-3.19	0.002	51.94 ± 7.8	-4.94	< 0.001
Brachial Aix (%)*	-11.9 (49.1)	7.9 (52.73)	19.85	< 0.001	8.1 (55.1)	20.00	< 0.001
SBP Ao (mmHg)*	113.9(13.1)	119.6 (15.2)	5.75	0.002	121.5 (20.9)	7.60	< 0.001
DBP Ao (mmHg)*	74.61 ± 8.5	78.68 ± 7.9	4.08	0.002	77.76 ± 9.3	3.16	0.003
PP Ao (mmHg)*	41.6 (10.6)	43.5 (8.8)	1.85	0.110	44.0 (8.7)	2.35	0.002
Aortic Aix (%)*	31.6 (24.8)	41.6 (26.7)	10.05	< 0.001	41.75 (27.9)	10.15	< 0.001
PWV (m/seg)*	7.10 (1.4)	7.00 (1.1)	-0.10	0.253	7.10 (0.9)	0.00	0.861

RESULTS USING DECAFEINATED COFEE

Variable	Baseline	30´	Δ	P value	60´	Δ	P Value
SBP B (mmHg)*	116 (11.9)	115.5 (19.7)	-0.50	0.365	116 (21.8)	0.00	0.933
DBP B (mmHg)*	73 ± 8.8	72.9 ± 9.6	0.0	0.977	74.8 ± 8.3	1.8	0.060
PP B (mmHg)*	43.5 (7.0)	44.5 (10.5)	1.00	0.050	41 (6.8)	-2.50	0.185
MAP (mmHg)*	87.5 ± 8.3	88.3 ± 10.0	0.7	0.542	89 ± 9.3	1.5	0.101
HR (beats/min)*	59.1 ± 9.9	56.1 ± 8.5	-3	> 0.001	55 ± 7.8	-4.1	< 0.001
Brachial Aix (%)*	-25 (52.5)	-22.8 (53.8)	2.15	> 0.001	-10.6 (53.3)	14.30	< 0.001
SBP Ao (mmHg)*	111.5 (21.1)	112.9 (20.6)	1.40	0.125	111.3 (27.8)	-0.20	0.039
DBP Ao (mmHg)*	73 ± 8.8	72.9 ± 9.6	0.0	0.977	74.8 ± 8.3	1.8	0.060
PP Ao (mmHg)*	39.6 (10.3)	40.9 (12.1)	1.35	0.003	39.3 (15.0)	-0.25	0.235
Aortic Aix (%)*	25 (26.5)	26.1 (27.2)	1.10	> 0.001	32.25 (27.0)	7.25	< 0.001
PWV (m/seg)*	6.95 (1.65)	7.00 (1.1)	0.05	0.180	7.10 (1.2)	0.15	0.493

RESULTS IN MEN USING REGULAR COFEE

	Baseline	30´		60´	
Variable	Men	Men	p	Men	p
SBP B (mmHg)°	119.44 ± 8.3	121.94 ± 9.4	0.174	124.38 ± 10.5	0.002
DBP B (mmHg)°	76.69 ± 6.2	79.94 ± 6.1	0.038	80.31 ± 6.8	0.010
PP B (mmHg)°	42.75 ± 5.4	42 ± 5.1	0.535	44.06 ± 5.6	0.255
MAP (mmHg)°	91 ± 6.5	94 ± 6.9	0.053	94 .94 ± 7.8	0.003
HR (latidos/min)°	55.5 ± 10.7	52 ± 9.42	0.026	49.88 ± 8.2	< 0.001
Brachial Aix (%)*	-13.55 (34.1)	-13.4 (41.9)	0.004	-17.6 (41.7)	0.017
SBP Ao (mmHg)°	116.73 ± 10.7	121.78 ± 11.6	0.052	124.01 ± 12.6	0.003
DBP Ao (mmHg)°	76.69 ± 6.2	81 ± 10.7	0.037	80.33 ± 6.8	0.010
PP Ao (mmHg)*	40 (7.3)	42 (7.9)	0.379	43.1 (5.3)	0.024
PP Amplif *	1.039 (0.26)	1.036 (0.27)	0.010	1.068 (0.2)	0.039
Aortic Aix (%)*	30.75 (17.3)	30.85 (21.3)	0.004	28.7 (21.1)	0.017
AP°	11.86 ± 6.3	15.42 ± 8.6	0.029	16.25 ± 9	0.021
ED (ms)°	341.89 ± 23.3	344.69 ± 22.3	0.388	347.5 ± 26.3	0.076
DRA°	52.75 ± 16.4	53.31 ± 13.5	0.883	59.94 ± 18	0.021
SAI (%)°	44.65 ± 4.4	44.12 ± 5.2	0.668	43.29 ± 4	0.336
DAI (%)°	55.35 ± 4.4	55.88 ± 5.2	0.668	56.71 ± 4	0.336
PWVAo (m/seg)*	7.15 (1.03)	7 (1.1)	0.298	6.95 (0.7)	0.925
Vasc. Age (years)°	30 ± 12.9	31.69 ± 12.9	0.209	29.38 ± 11	0.757
RT (ms)°	151.06 ± 18,7	148.81 ± 18.4	0.343	151.44 ± 15.2	0.893

RESULTS IN WOMEN USING REGULAR COFEE

	Baseline	30´		60´	
Variable	Women	Women	p	Women	p
SBP B (mmHg)°	117.13 ± 12.7	122.38 ± 12.3	0.043	119.81 ± 12.9	0.149
DBP B (mmHg) °	72.5 ± 10.1	77.44 ± 9.3	0.019	75.19 ± 10.9	0.109
PP B (mmHg) °	44.63 ± 5.7	44.94 ± 6.9	0.880	44.63 ± 5	1.000
MAP (mmHg) °	87.44 ± 10.8	92.44 ± 10	0.017	90.13 ± 11.4	0.092
HR (beats/min) °	58.25 ± 8.5	55.38 ± 7.2	0.003	54 ± 7	0.006
Brachial Aix (%)*	-1.29 ± 31.15	12.24 ± 29.21	0.003	13.43 ± 31.4	0.002
SBP Ao (mmHg) °	116.99 ± 15	124.94 ± 15.1	0.009	122.39 ± 16.4	0.014
DBP Ao (mmHg) °	72.53 ± 10.3	77.42 ± 9.3	0.021	75.2 ± 10.9	0.113
PP Ao (mmHg) °	44.47 ± 7.22	47.52 ± 8.5	0.130	47.19 ± 7.8	0.032
PP Amplif *	0.95 (0.3)	0.89 (0.1)	0.044	0.89 (0.1)	0.109
Aortic Aix (%)°	36.97 ± 15.9	43.84 ± 14.8	0.003	44.44 ± 15.9	0.002
AP *	17.15 (14.1)	24.05 (10)	0.006	24.15 (11.9)	0.004
ED (ms) °	345 ± 15	355 ± 15	0.015	357.5 ± 15	0.014
DRA°	47.75 ± 9	51.31 ± 14.5	0.314	50.88 ± 12.3	0.318
SAI (%)*	44.45 (4.5)	44.4 (8)	0.266	43.7 (4.9)	0.063
DAI (%)*	55.55 (4.5)	55.6 (8)	0.266	56.3 (4.9)	0.063
PWVAo (m/seg) *	7.05 (1.4)	7.05 (1.4)	0.529	7.2 (3.2)	0.897
Vasc. Age (years) *	31.5 (20.8)	30.5 (20)	0.665	33.5 (39)	0.674
RT (ms) *	144 (30.8)	145 (30.2)	0.550	140 (44)	0.776

RESULTS

SBP increased at 30 and 60 min 3.9 mmHg (p=0.013) y 3.8 mmHg (p=0.002) respectively, la DBP increased 4.1 mmHg (p=0.001) y 3.2 mmHg (p=0.003), MAP 4.0 mmHg (p<0.001) y 3.3 mmHg (p=0.001), Heart rate decreased 3.2 (p=0.002) and 5 beats/minute (p<0.001) and aortic SBP increased 5.8 mmHg (p=0.002) and 7.6 mmHg (p=0.003) only with caffeine.

Brachial Aix increased 19.9% at 30 (p<0.001) and 20.0% at 60 minutes (p<0.001). Aortic Aix increased 10.05% (p<0.001) y 10.2% (p<0.001) only with caffeine. PWV was not affected by caffeine (p=0.861).

The shift of these parameters was mainly driven by changes in women.

CONCLUSION

Caffeine, in a healthy selected population, at usual doses (two "expresos") increased peripheral AS but not aortic PWV.

It seems to be more pronounced in women.