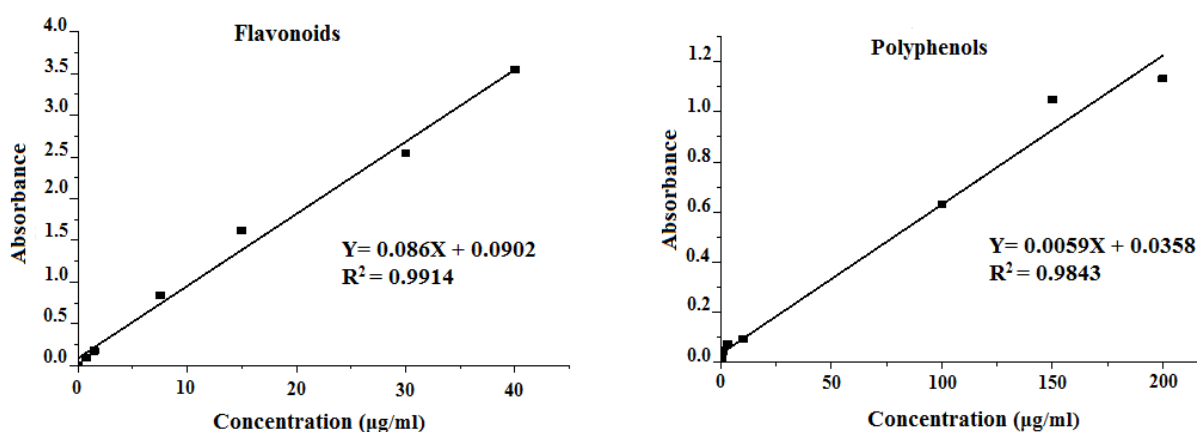
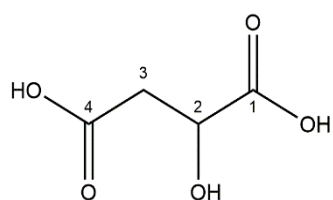


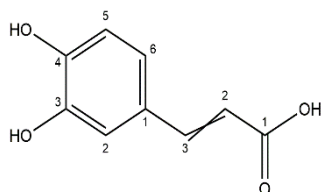
**Phytochemical Profile, Inhibition Potential Toward  $\alpha$ -Glucosidase and  $\alpha$ -Amylase Activities and Toxicity Evaluation of Peel Extracts of *Citrus aurantium* (L) from Northeastern Morocco**



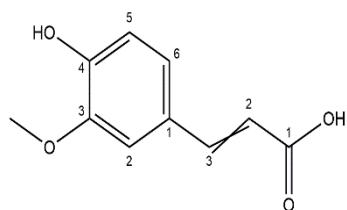
**Figure S1:** Quercetin (Flavonoids) and Gallic acid (Polyphenols) calibration curves



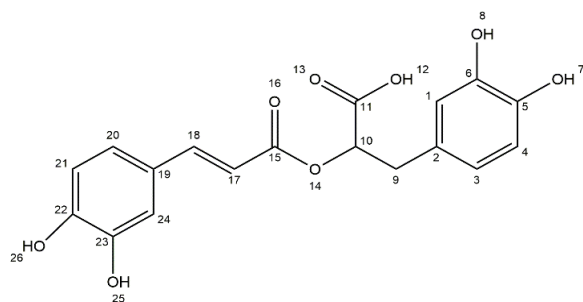
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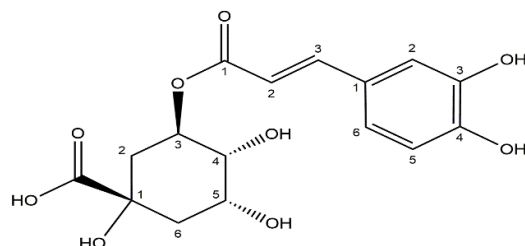
Caffeic acid



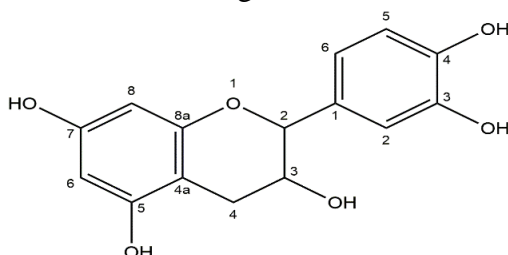
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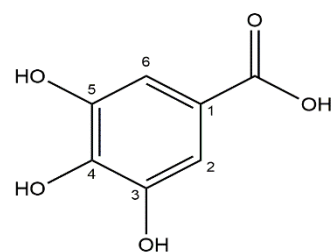
Rosmarinic acid



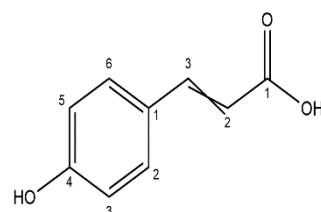
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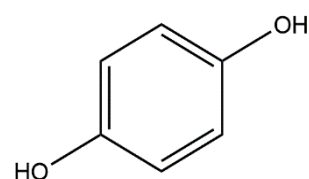
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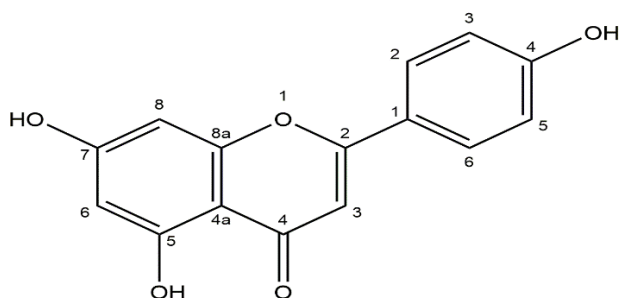
Gallic acid



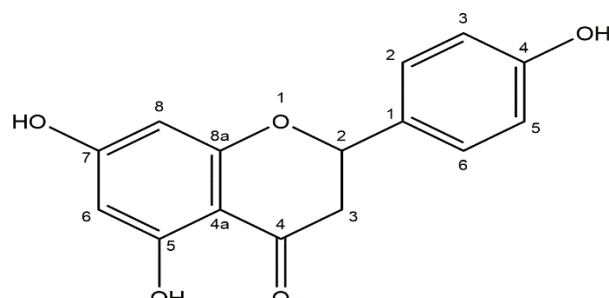
Coumaric acid



Hydroquinone

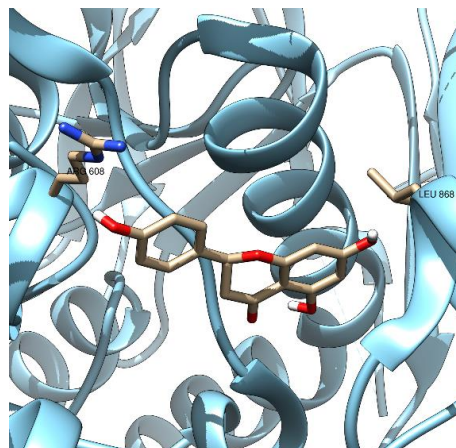
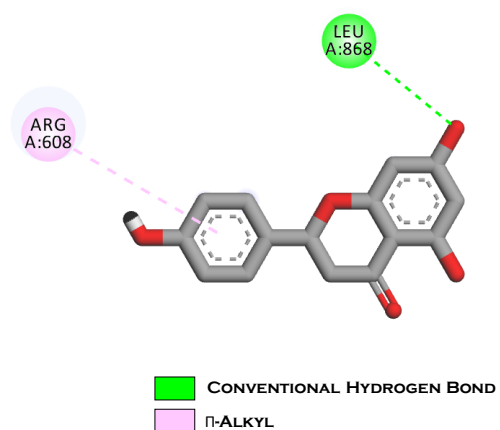


Apigenin



Naringenin

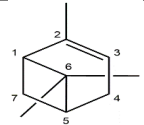
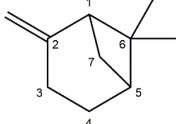
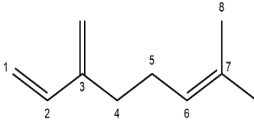

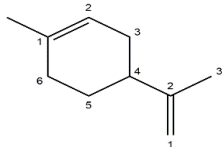
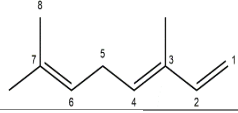
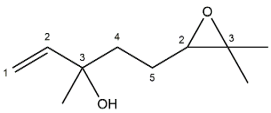
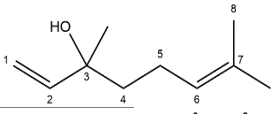
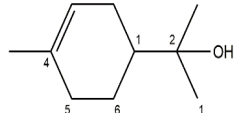
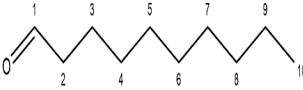
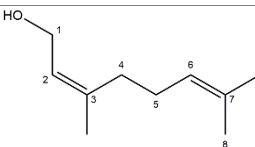
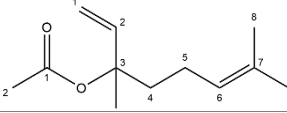
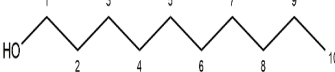
**Figure S2:** Chemical structures of the molecules identified in *C. aurantium* L peel extracts: chloroform extract (CFE), acetone extract (ACE) and hydro-alcoholic extract (EWE).



COMPOUNDS	BINDING SCORE (KCAL/MOL)	INTERACTING RESIDUES	INTERACTION TYPE
Naringenin	-7.2	ARG 608, LEU 868	H-bonding, $\pi$ -Alkyl

**Figure S3:** Molecular Docking of Naringenin on human  $\alpha$ -glucosidase active site.

**Table S1:** The chemical constituents of the essential oil *C. aurantium* L. peel

Peak Number	Retention time (min)	Peak Area (%)	Molecules Name	Molecules structure
1	7.625	3.126	$\alpha$ -Pinene	
2	8.725	3.729	$\beta$ -Pinene	
3	9.083	17.614	$\beta$ -Myrcene	
4	9.367	1.612	Caprylaldehyde	
5	9.942	35.173	D-Limonene	
6	10.358	4.154	$\beta$ -Ocimene	
7	10.875	2.518	Linalool oxide	
8	11.392	18.194	$\beta$ -Linalool	
9	13.092	3.478	$\alpha$ -Terpineol	
10	13.283	1.493	Decanal	
11	13.675	0.948	Nerol	
12	14.092	5.260	Linalyl Acetate	
13	14.342	1.159	Decanol	

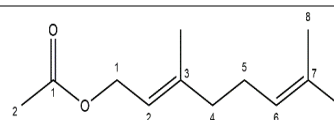
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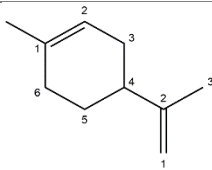
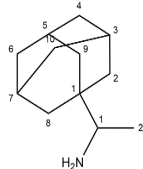
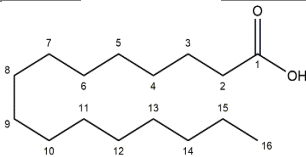
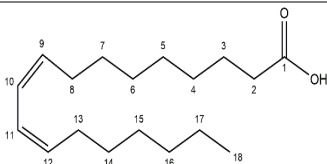
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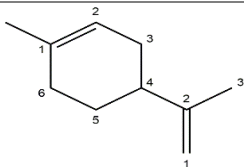
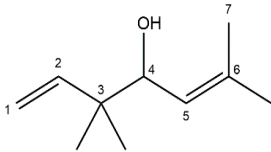
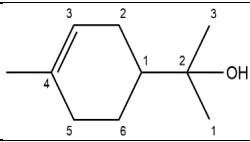
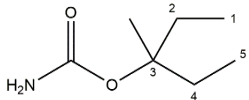
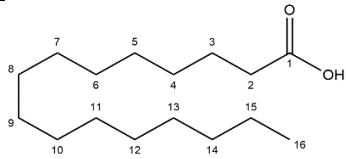
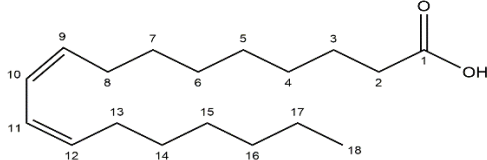
Geranyl Acetate



**Table S2:** Chemical composition of ethyl acetate extract from the peel of *C. aurantium* L.

Peak Number	Retention time (min)	Peak Area (%)	Molecules Name	Molecules structure
1	9.933	21.117	D-Limonene	
2	18.475	5.681	Rimantadine	
3	22.583	18.827	Palmitic Acid	
4	24.325	54.376	Linoleic Acid	

**Table S3:** The chemical composition of cyclohexane extract from the peel of *C. aurantium* L.

Peak Number	Retention time (in)	Peak Area (%)	Names Molecules	Molecules structure
1	9.933	36.154	D-Limonene	
2	13.583	21.620	1,5-Heptadien-4-ol, 3,3,6-trimethyl-	
3	15.558	1.835	$\alpha$ -Terpineol	
4	17.917	2.199	Emylcamate	
5	22.575	9.346	Palmitic Acid	
6	24.325	6.132	Linoleic Acid	

**Table S4:** The main phenolic compounds identified in *C. aurantium* L. peel and in *C. aurantium* L var. *amara* reported in the literature.

Species name	Fruit's origin	Extract	Identified Phenolic components	References
Bitter orange ( <i>Citrus aurantium</i> . L)	USA	80% Ethanol	Isonaringin, Naringin, Hesperidin, Neohesperidin, Naringenin, Hesperitin, Nobiletin and Tangeritin	[33]
	Italy	Methanol	Caffeic, p-Coumaric, Ferulic, and Synapic acids, Naringin, Neohesperidin, Hesperidin, Narirutin, and Neohesperidin	[34]
	Iran	Methanol	Gallic, Caffeic, and Syringic acids, Pyrogallol, Naringin, Quercetin, and Rutin	[35]
	Tunisia	Methanol	Gallic, Chlorogenic, Rosmarinic, Trans-2-hydroxycinnamic, p-Coumaric, Ferulic acids, Epicatechin, Catechin, Naringin and Rutin	[31]
	China	20% Ethanol	Naringin, Hesperidin, Neohesperidin, Naringenin, Hesperitin, Narirutin, and Neohesperidin	[32]
Bitter orange ( <i>Citrus aurantium</i> L var. <i>amara</i> )	Italy	80% Ethanol		[36]
	Cuba	70% Ethanol	Apigenin-6,8-di-C-glucoside, Diosmetin-6,8-di-C-glucoside, Rhoifolin 4'-glucoside, Neohesperidin, Rhoifolin, Neodiosmin, Brutieridin, Nobiletin	[37]
	China	80% Methanol	Tangeretin, Auraptene, Nobiletin, Scopoletin, Hesperitin-O-rhamnoside, Diosmetin-O-glucoside, Apigenin, Hesperidin, Naringenin-O-glucoside, Naringenin, Asparagine, Luteolin-O-glucoside, Eriocitrin, Narirutin, Naringin, Neohesperidin	[38]