

“Elicitation – a new window into plant chemodiversity and phytochemical drug discovery”

Table 1. List of additional elicitors screened for their ability to induce biochemical changes in plant roots.

Compounds tested as elicitors	Concentration in hydroponic solution
AgNO ₃	40.0, 4.0, 0.4, 0.04, 0.02, 0.01 mM
NiNO ₃	0.5, 0.05, 0.005 mM
CuSO ₄	1.0, 0.1, 0.01 mM
Pb(NO ₃) ₂	1.0, 0.1, 0.01 mM
Yeast extract	1.0, 0.2, 0.04 g/L
Laminarin	1.0, 0.1, 0.01 g/L
Sodium dodecyl sulfate	1.0, 0.1, 0.01 g/L
Jasmonic acid	10.0, 1.0, 0.1, 0.01 mM
Okadaic acid	5.0, 1.0, 0.5 µM
Polygalacturonic acid	1.0, 0.2, 0.04 g/L
l-Phosphatidic acid	1.0, 0.2, 0.04, 0.008 mM
PEG (avg. MW 3,350)	10.0, 1.0, 0.1 %
H ₂ O ₂	0.5, 0.1, 0.01 M
Salicylic acid	5.0, 0.5 mM
Calyculin	6.0, 0.6, 0.06 µM
l-Amino butyrate	10.0, 1.0, 0.1 mM
Eicosapentanoic acid	0.5, 0.1, 0.02 mM
Arachidonic acid	10.0, 2.0, 0.2 mM
Glutathione	100.0, 10.0, 1.0 mM
Ascorbic acid	1.0, 0.1 g/L
NaF	500.0, 50.0, 5.0 mM

Plants from 3 species, *Glycyne max*, *Lupinus luteus*, and *Medicago sativa* were cultivated hydroponically as described in the experimental section and treated with these elicitors in the concentrations listed in the text. The efficiency of the elicitors was determined by their ability to induce flavonoid biosynthesis in the elicited plants, compared with non-elicited plants from the same species.

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Table 2. Plant species* with bioactivity (B=antibacterial, F=antifungal, C=anticancer), belonging to the families listed in Table 4 (abbreviations of elicitors are the same as in the article)

Family/Species	Elicitor				
	Acetate	Chitosan	MeJA	MeSA	n.e.
Anacardiaceae					
<i>Rhus integrifolia</i>	B, C	B	B	B	B
<i>Rhus ovata</i>	C	B, C	B, C	B	
<i>Rhus typhina</i>	B, C	B	B	B	B
Apiaceae					
<i>Apium graveolens</i>			B		
<i>Cryptotaenia japonica</i>	B				B, F
<i>Levisticum officinale</i>			B	B	B
<i>Petroselinum crispum</i>	B, F		F		
<i>Pimpinella anisum</i>		B			
Asteraceae					
<i>Anthemis nobilis</i>	B, C				
<i>Bellis perennis</i>	C				
<i>Calendula officinalis</i>	C				
<i>Centaurea maculosa</i>	B				
<i>Chrysanthemum coronarium</i>	C, F				
<i>Chrysanthemum leucanthemum</i>	B		B		
<i>Chrysanthemum parthenium</i>	B, F, C				
<i>Cnicus benedictus</i>	B	B		C	B, C
<i>Eupatorium cannabinum</i>	B, F				
<i>Eupatorium maculatum</i>	B, F	F	F	F	F
<i>Grindelia robusta</i>					C
<i>Lasthenia glabrata</i>	B, C	C	B		B
<i>Layia platiglossa</i>	C				
<i>Solidago virgaurea</i>	B, F, C				
Brassicaceae					
<i>Barbarea verna</i>	C			B	
<i>Brassica hirta</i>	B		B	B	B
<i>Brassica oleracea</i>					B
<i>Brassica rapa</i>					F
<i>Iberis intermedia</i>	C	C	C	C	C
<i>Isatis tinctoria</i>	B			B	B
<i>Nasturtium officinale</i>	B				B
Caryophyllaceae					
<i>Dianthus barbatus</i>					C
<i>Gypsophila paniculata</i>	C			C	C
<i>Lychnis alba</i>	B			B, F	B
<i>Lychnis chalcidonica</i>	C, F		F	C, F	F

Supporting Information

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Table 2 continued.

Family/Species	Elicitor				
	Acetate	Chitosan	MeJA	MeSA	n.e.
<i>Cucurbitaceae</i>					
<i>Citrullus colorynthis</i>	C	C	C	B, C	C
<i>Cucumis sativus</i>	B, C	C	C	C	C
<i>Lagenaria siceraria</i>	C	C	C	C	C
<i>Momordica charantia</i>	C				
<i>Fabaceae</i>					
<i>Acacia saligna</i>		B			
<i>Albizia julibrissin</i>	C, F	B, C, F	B, C, F	C, F	C, F
<i>Albizia kolomikta</i>	B	F			B
<i>Erythrina corallodendron</i>	B	F		F	
<i>Glycyrrhiza echinata</i>	C				
<i>Gymnocladus dioicus</i>	B, C	C	F		
<i>Indigofera suffruticosa</i>		B			
<i>Laburnum anagyroides</i>	B	B	B	B	B
<i>Lupinus arboreus</i>			F		
<i>Ononis spinosa</i>	B	B			
<i>Pachyrhizus erosus</i>	B, C				
<i>Petalostemon candidum</i>	B	B	B	B	B
<i>Pueraria lobata</i>	B				
<i>Lamiaceae</i>					
<i>Dracocephalum moldavica</i>	C				
<i>Leonurus cardiaca</i>	B				
<i>Lycopus europaeus</i>	C			C	
<i>Marrubium vulgare</i>	C	B	B		
<i>Monarda citriodora</i>	F	F		F	F
<i>Pogostemon patchouli</i>	B				
<i>Salvia apiana</i>		C			
<i>Schizonepeta tenuifolia</i>	B				
<i>Scutellaria orientalis</i>				C	
<i>Thymus vulgaris</i>		B, F			
<i>Polemoniaceae</i>					
<i>Gilia capitata</i>		B	B		
<i>Linanthus grandiflorus</i>	C	C	C	C	C
<i>Polemonium caeruleum</i>	F	F	F	F	F

* The cultivation of all plant species tested was initiated from seeds, purchased from commercial vendors as Chiltern Seeds, Ulverston, England; Richters Herbs, Ontario, Canada; B & T World Seeds, Olonzac, France.

As seen from this table, most non-elicited plants from *Cucurbitaceae*, showed anti-cancer activity. This was expected because plants from this family synthesize cucurbitacins, most of which are cytotoxic. Also, root extracts from non-elicited *Juglans regia* (walnut), that constitutively synthesize cytotoxic naphthoquinones, showed activity in the anti-

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cancer screens. These plants can be regarded as positive controls for the anti-cancer assays. To the contrary, many species of genera such as *Scabiosa*, *Pachyrhizus*, *Phacelia*, which have no reported cytotoxic activities, showed no anti-cancer activity in our screens, and, thus, can be regarded as negative controls.