

ESI table 1. Media used for the optimization of hairy root induction, stabilization and steady growth in *A. bracteosa*

Medium	Composition
First phase media (hairy root induction \geq 10 days)	MS/B5+ Claforan 500 mg/L
	SH+ Claforan 500 mg/L
Second phase media (hairy root proliferation \geq 30-35 days)	0.5MS+ Claforan 500 mg/L
	0.5MS+IBA+ Claforan 500 mg/L
	0.5 B5+ Claforan 500 mg/L
	0.5 B5+IBA+ Claforan 500 mg/L
	SH+ Claforan 500 mg/L
Third phase medium (stable growth and maintainability)	MS+ Claforan 250 mg/L
	0.5MS+ Claforan 250 mg/L
	B5+ Claforan 250 mg/L
	0.5 B5+ Claforan 250 mg/L
	SH+ Claforan 250 mg/L

After one month of culturing of hairy roots in third phase medium, claforan was removed from it.

ESI table 2. Effect of medium on induction of hairy roots in *A. bracteosa*

Media	Strain	Explants	No. of roots	Explants producing roots	Root induction (days)	Branching (%)
MS/B5	LBA-9402	839	49	34	13	40
	A4	415	33	23	12	55
	Arqua1	262	12	8	9	60
SH	LBA-9402	60	289	31	7	90
	A4	20	78	5	8	100

ESI table 3. Effect of medium on proliferation of hairy roots in *A. bracteosa*

Strain	Media	Growth status of roots
LBA-9402	0.5B5+IBA	Secondary branches, increase in length, few produce callus
	0.5B5	Single root, no ramification, very slow growth
	0.5MS	Single root, no ramification, very slow growth
	0.5MS+IBA	More increase in length than width, ramification, some produce callus
	SH	No ramification, callus induction
A4	0.5B5+IBA	Ramification, length increase, some generate callus by increasing width
	0.5B5	No growth, no ramification
	0.5MS	No growth, no ramification
	0.5MS+IBA	Ramification, increased in width and swollen, length also increased
	SH	Pale yellow, dying
ARqual	0.5B5+IBA	Swollen callus, spiny
	0.5B5	No growth, no ramification, greyish
	0.5MS	Dead
	0.5MS+IBA	Dying, no growth
	SH	Surviving

ESI table 4. Effect of medium on stable growth and maintainability of hairy roots in *A. bracteosa*

Media	Growth status of roots
B5	Bit swollen, broader, thick, ramification but less increase in length
MS	Callus like, beaded appearance, no increase in length but increase in width
0.5B5	Normal hairy roots, ramification, increase in length found, few are thick
0.5MS	Multiple ramification, densely hairy, increase in length, few are thick
SH	No increase, pale yellow roots, dying

ESI table 5. Effect of explants' origin on hairy root induction and its attributes in *A. bracteosa*

	Strain	Explants	No. of roots	Explants producing roots	Root induction (days)	Branching
<i>In vitro</i>	LBA-9402	634	22	15	14	No
	A4	245	12	15	13	No
	Arqua1	204	9	5	8	No
<i>Ex vitro</i>	LBA-9402	265	301	41	11	Yes
	A4	190	99	16	12	Yes
	Arqua1	58	3	3	11	Yes

ESI table 6. PCR analysis of the T-DNA genes of pRi in transgenic hairy roots genome

Hairy Root	Morphology	<i>rolC</i>	<i>virD1</i>	<i>auxI</i>	<i>masI</i>	<i>ags</i>
A1	THR	+	-	+	+	+
A2	CM	+	-	+	+	+
L1	THR	+	-	+	+	+
L2	THR	+	-	+	+	+
L3	THR	+	-	+	+	+
L4	TK	+	-	+	+	+
L5	THR	+	-	-	+	-
L6	CM	+	-	+	+	+
L7	TK	+	-	+	+	+
L8	THR	+	-	+	+	+
L9	TK	+	-	+	+	+
L10	THR	+	-	+	+	+
L11	THR	+	-	-	+	-
L12	THR	+	-	-	+	+
L13	THR	+	-	+	+	+
L14	TK	+	-	+	+	+
L15	THR	+	-	-	+	+
L16	TN	+	-	-	-	-
L17	TN	+	-	-	+	-
L18	THR	+	-	+	+	+
L19	TK	+	-	+	+	+
L20	THR	+	-	+	+	+
L21	CM	+	-	+	+	+
L22	TN	+	-	-	-	-
L23	THR	+	-	+	+	+
L24	TK	+	-	+	+	+
L25	THR	+	-	-	+	+
L26	THR	+	-	+	+	-
L27	CM	+	-	+	+	+
L28	TN	+	-	-	-	-
L29	THR	+	-	+	+	-
L30	THR	+	-	-	+	-
L31	THR	+	-	+	+	+
L32	THR	+	-	+	+	+
L33	TK	+	-	+	+	+
L34	THR	+	-	+	+	+
L35	THR	+	-	-	+	-
L36	CM	+	-	+	+	+
L37	THR	+	-	+	+	+
L38	THR	+	-	-	+	+
L39	THR	+	-	+	+	-
L40	CM	+	-	+	+	+
L41	TN	+	-	-	-	-
L42	CM	+	-	-	+	+
L43	THR	+	-	-	+	+
L44	THR	+	-	-	+	-
L45	THR	+	-	+	+	+
L46	THR	+	-	+	+	+
L47	THR	+	-	+	+	+
L48	TK	+	-	+	+	+
L49	TN	+	-	-	-	-
L50	CM	+	-	+	+	+
L51	THR	+	-	+	+	+
L52	CM	+	-	+	+	+
L53	CM	+	-	+	+	+
L55	THR	+	-	+	+	+
L56	THR	+	-	-	+	-
Ar1	+	-	+	+	+	+

+: present, -: absent