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(12) **United States Plant Patent**  
**Stefanini**

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- (54) **GRAPEVINE ‘IASMA ECO 1’**
- (50) Latin Name: *Vitis vinifera* L.  
Varietal Denomination: **IASMA ECO 1**
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- (\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 7 days.
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- (22) Filed: **Jan. 31, 2014**
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*A01H 5/00* (2006.01)
- (52) **U.S. Cl.**  
USPC ..... **Plt./205**
- (58) **Field of Classification Search**  
USPC ..... Plt./205  
See application file for complete search history.

(56) **References Cited**  
  
PUBLICATIONS

PLUTO Plant Variety Database Jun. 20, 2015, p. 1.\*  
U.S. Appl. No. 13/999,223, filed Jan. 31, 2014, Stefanini.

\* cited by examiner

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(57) **ABSTRACT**

This invention is a new and distinct grapevine variety named ‘IASMA ECO 1’ which is characterized by producing red oval berries in a loose bunch, which is much less sensitive to *Botrytis cinerea*.

**3 Drawing Sheets**

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Latin name of the genus and species claimed: *Vitis vinifera* L.  
Variety denomination: ‘IASMA ECO 1’.

**CROSS REFERENCE TO RELATED APPLICATIONS**

The present application is related to Community Plant Variety application 2012/2342, filed in the Community Plant Variety Office on Oct. 25, 2012, the entire contents of which are hereby incorporated by reference.

**BACKGROUND OF THE INVENTION**

**Discussion of the Background**

The new and distinct grapevine described and claimed herein originated from a hand pollinated cross of the Teroldego variety (seed parent) and the Lagrein variety (pollen parent), neither of which are protected by plant patent, plant variety protection certificate, or similar. The seeds were subsequently germinated and the resulting plants were planted in the field. The present variety of grapevine was selected as a single plant, and asexually propagated by hardwood cuttings. The resulting propagules were planted and were found to reproduce true-to-type through at least three generations of asexual reproduction, with the observations taking place from 2004 to 2010 in San Michele All’Adige (TN)—Trentino Alto Adige—Italy (46° 11' Lat. N., 11° 28' Long. E., 235 s.l.m.).

**SUMMARY OF THE INVENTION**

To the inventor’s knowledge, there are no varieties similar to the new variety; being a crossing result, they contain 50%

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of the genetic material of the seed parent and 50% of the genetic material of the pollen parent.

The present variety produces red berries. The color of the berries is red as in the parents. The variety has a loose bunch with oval berries, ripens 1 week later and is much less sensitive to *Botrytis cinerea*.

The variety IASMA ECO 1 differs from the parents Teroldego and Lagrein in having hair without anthocyanin coloration in the apex. Hairs are not writhing and erect compared to parents that have high presence of hairs writhing and erect.

The spine of the sprout among the nodes and internodes is green (149A) in IASMA ECO1 variety, whereas in the parents it is instead green (150A) with red stripes (44B). Creeping hairs are not present in the internodes in variety IASMA ECO 1 while in its parents creeping hairs are present (sparse) or absent on internodes.

The young leaf of the IASMA ECO 1 is green (136D) while that of the parents is NN155C with a high density of creeping hairs, while IASMA ECO 1 has an average density of them.

The mature leaf variety IASMA ECO 1 has 5 V-shaped lobes, while the parents have only three lobes with a revolute profile.

The teeth are straight and medium-sized in IASMA ECO 1, while those of Teroldego are convex, and in Lagrein they are concave and straight and short. The petiole sinus is Brace shaped, slightly open in variety IASMA ECO 1 while in Teroldego it is open V-shaped and U-shaped open in Lagrein. The base of the sinus is V-shaped in the parent varieties, while in IASMA ECO 1 it is U-shaped. The density of prostrate hairs on the ribs is high in the parents and medium in the variety IASMA ECO 1.



The section of woody shoot is circular in Teroldego and Lagrein, while in IASMA ECO 1 it is elliptic.

The first inflorescence in IASMA ECO 1 is on the second node. The basal bud (1-3) fertility is very high, while the first inflorescence of Lagrein is on 3th and 4th node, with medium fertility of the buds; and in Teroldego the first inflorescence is on 5th internode with very low fertility. The number of inflorescences per shoot is 1.1 to 2.1 in parents and 2.1 to 3 in the variety IASMA ECO 1.

The first inflorescence of IASMA ECO 1 is about 15 cm long, and the date of full bloom is generally around June 10, while Lagrein has 15 cm inflorescence, and a date of full bloom in 7th June. The first inflorescence of Teroldego is 20 cm long and the date of full bloom is 7th June.

The cluster of IASMA ECO 1 is very long (>24 cm), large (>20 cm) and very loose, Teroldego shows a cluster of similar size but is very compact, while in Lagrein the bunches are compact and their length is between 16 and 24 cm and <12 cm broad.

The IASMA ECO 1 berry is elliptic, narrow (<13 mm) with the hilum barely visible. The flesh is slightly firm, and the length of pedicel is medium. In Teroldego and Lagrein the berry width is 13-18 mm, the hilum is visible, the pulp is firm, and the pedicel short.

The vesting period of IASMA ECO 1 is later than that of the parents.

#### BRIEF DESCRIPTION OF THE FIGURES

FIG. 1 provides photographic illustration in full color of 'IASMA ECO 1' in various views. The colors are as nearly true as is reasonably possible in a color representation of this type.

FIG. 2 provides a graphical representation of the average profile of aglycone flavonols and glycoside anthocyanins in the present invention variety by percentile.

FIG. 3 provides a graphical representation of the average profile of cinnamic acids in the present invention variety by percentile and by mg/kg.

#### DETAILED DESCRIPTION OF THE INVENTION

Throughout this specification, color names beginning with a small letter signify that the name of that color, as used in common speech, is aptly descriptive. Color names beginning with a capital letter or represented as a numerical designator indicate values based upon R.H.S. Colour Chart, published by The Royal Horticultural Society, London, England.

Throughout this specification subjective description values conform to those set forth by the Community Plant Variety Office (France) in the Technical Questionnaire for Grapevine varieties.

The descriptive matter which follows pertains to 'IASMA ECO 1' plants grown in the vicinity of San Michele All' Adige (TN)—Trentino Alto Adige—Italy (46° 11" Lat. N., 11° 28" Long. E, 235 s.l.m.) from 2004 to 2010, and is believed to apply to plants of the variety grown under similar conditions of soil and climate elsewhere:

Young shoot (10-30 cm):

*Aperture of tip.*—(Fully open).

*Distribution of anthocyanin pigmentation of tip.*—(Absent).

*Intensity anthocyanin pigmentation of tip.*—(None).

*Density prostrate hairs of tip.*—(None).

*Density erect hairs of extremity.*—(None).

Shoot on blooming:

*Attitude.*—(Semi-erect).

*Color of dorsal side of internodes.*—(Green; 149A).

*Color of ventral side of internodes.*—(Green; 149A).

*Color of dorsal side of nodes.*—(Green; 149A).

*Color of ventral side of nodes.*—(Green; 149A).

*Density erect hairs on nodes.*—(None).

*Density erect hairs on internodes.*—(None).

*Density prostrate hairs on nodes.*—(None).

*Density prostrate hairs on internodes.*—(None).

*Anthocyanin pigmentation on the latent bud scales.*—(Absent).

*Intensity anthocyanin pigmentation the bud scales.*—(None).

Tendrils:

*Number of consecutive tendrils.*—(2 or less).

*Length.*—(Long).

Young leaf:

*Color of the upper side.*—(Green; 136D).

*Density prostrate hairs between the veins.*—(High).

*Density erect hairs between the veins.*—(None).

*Density prostrate hairs on veins.*—(Medium).

*Density erect hairs on veins.*—(Medium).

Mature leaf:

*Size of blade.*—(Medium).

*Shape of blade.*—(Pentagonal).

*Number of lobes.*—(Five).

*Color of the upper side.*—(Medium green; 149A).

*Anthocyanin pigmentation veins on the upper side.*—(Absent).

*Anthocyanin pigmentation veins on the lower side.*—(Absent).

*Goffering of blade.*—(Medium).

*Undulation of blade between main and lateral veins.*—(Present).

*Profile in cross section.*—(V-shaped).

*Blistering of upper side.*—(Weak).

*Shape of teeth.*—(Straight).

*Size of teeth in relation to blade size.*—(Medium).

*Length of teeth compared with their width.*—(Medium).

*Degree of opening of petiole sinus.*—(Little open).

*Shape of base of petiole sinus.*—(Brace-shaped).

*Teeth of the petiole sinus.*—(Absent).

*Petiole sinus base delimited by veins.*—(Absent).

*Degree of opening of upper lateral sinuses.*—(Slightly overlapped).

*Shape of base of upper lateral sinuses.*—(U-shaped).

*Teeth in the upper lateral sinuses.*—(Absent).

*Density of prostrate hairs between the veins of the lower side.*—(Low).

*Density of erect hairs between the veins of the lower side.*—(None).

*Density of prostrate hairs on the veins of the side.*—(Medium).

*Density of erect hairs on the veins of the lower side.*—(None).

*Prostrate hairs on the main veins of the upper side.*—(Absent).

*Erect hairs on the main veins of the upper side.*—(Absent).

*Density of prostrate hairs on petiole.*—(None).

*Density of erect hairs on petiole.*—(None).

*Length of petiole compared to middle vein.*—(Slightly longer).



## Woody shoot:

*Cross section.*—(Elliptic).*Structure of surface.*—(Striate).*Main color.*—(Brownish).

## Inflorescence:

*Sexual organs.*—(Stamens complete, gynoecium developed).

## Bunch:

*Length.*—(Very long, >24 cm).*Width.*—(Very wide, >20 cm).*Density.*—(Loose)-(medium).*Length of peduncle.*—(Long).*Lignification of peduncle.*—(At the base only).*Shape.*—(Conical).*Number of wings.*—(3-4 wings).

## Berry:

*Length.*—(Medium, <18 mm).*Width.*—(Narrow, <13 mm).*Uniformity of size.*—(Uniform).*Shape.*—(Elliptic long).*Color of the skin.*—(Blue black; 89C).*Uniformity of the color of the skin.*—(Uniform).*Bloom.*—(Medium).*Thickness of the skin.*—(Medium).*Hilum.*—(Little visible).*Intensity anthocyanin pigmentation of the flesh.*—(None).*Juiciness of the flesh.*—(Very juicy).*Must yield.*—(Medium).*Firmness of the flesh.*—(Slightly firm).*Particular flavor.*—(None).*Length of pedicel.*—(Medium, <10 mm).*Ease of detachment from pedicel.*—(Easy).*Formation of seeds.*—(Rudimentary).*Time of autumn coloring of leaves.*—(Red).

## Phenologic characteristics:

*Time of bud burst.*—Early.*Time of full bloom.*—Medium.*Time of berry ripening.*—Medium.*Time of maturity.*—Late.

## Productive characteristics:

*Real fertility of the buds.*—1.40.*Potential fertility.*—1.82.*Position of the first bunch.*—3rd-4th shoot.*Production of grapes per vine.*—Kg 3.70.*Yield per hectare quintal.*—125.*Medium weight bunch.*—g 297.*Medium weight berry.*—g 1.98.*Sugars, brix degree.*—21.86.*Total acid content.*—g/l 8.24. pH 3.17.

The present variety tested negative against each of the GFLV, ArMV, GLRaV-1, GLRaV-3, and GVA viruses.

## FINDINGS OK MOLECULAR INVESTIGATIONS

DNA was extracted from young leaves of different accessions for each variety by using the Doyle and Doyle extraction method (1990) as modified by Grando et al. (2003). Molecular markers were obtained by analyzing DNA specimens at the 9 microsatellite loci specified by the European projects named Gen-Res81 and Grape-Gen06 for vine variety characterization and at locus VMC1B11 (Vitis Microsatellite Consortium). In particular, the primers and amplification conditions described by Thomas and Scott (1993) for locus VVS2, Bowers et al. (1996) for loci VVMD5 and VVMD7, Bowers

et al. (1999) for loci VVMD25, VVMD27, VVMD28 and VVMD32 and Sefc et al. (1999) for loci VrZAG62 and VrZAG79 were applied. PCR products were separated and analysed with the Genetic Analyzer ABI3130 and the GenMapper® v4.0 software.

		Microsatellite markers									
		VVMD 5		VVMD 7		VVMD 25		VMD2 7		VVMD2 8	
10	IASMA ECO 1	227	227	239	247	240	240	177	183	229	255
		Microsatellite markers									
		VVMD3 2		VVS2		VMC1B1 1		VrZAG6 2		VrZAG7 9	
15	IASMA ECO 1	253	263	134	134	167	173	191	193	243	255
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## FINDINGS OF CULTIVATION TESTS

The summary tables below provide the findings for various vintage years concerning the 'IASMA ECO 1' vine variety compared to the reference vine variety. Average data relative to some plant production parameters observed at the San Michele a/A (TN) vineyard (vintage years 2004-2010): vine grown following the Guyot method (arched shoot pruned at 8-10 sprouts/vine).

		IASMA ECO 1 S. Michele a/A	TEROLDEGO S. Michele a/A
35	Grape/vine production (kg)	3.38	4.12
	Actual shoot fertility	1.40	1.29
	Potential shoot fertility	1.64	1.57
	Wood/vine production (kg)	0.626	0.494
40	Must sugars (° Brix)	21.86	20.80
	Moulds (%)	0.00	5.87
	bunch botrytis		
	Moulds (%) rachis desiccation	0.00	0.00
	Grape/wood ratio	5.393	8.340

Average data relative to mechanical bunch analysis and must chemical composition. Collection of bunches in the vintage years 2004-2010 at technological maturity (second half of September). Vineyard in S. Michele a./A. (S. Donà).

		IASMA ECO 1			
		Values			
		Average	Limit v.		
		v.	Min	Max	
		Mechanical bunch analysis			
60	bunch average weight	g	297	185	429
	berry average weight	g	2.01	1.73	2.28
	berry longitudinal diameter	mm	18	14	23
	berry average diameter	mm	13	11	16
		Bunch composition			
65	berries	(% in weight)	94.7	92.5	97.2
	stems	(% in peso)	5.3	2.8	7.5

-continued

IASMA ECO 1				
Values				
		Average	Limit v.	
		v.	Min	Max
Berry composition				
skins	(% in weight)	18.2	17.6	19.7
seeds	(% in weight)	2.1	1.8	2.3
pulp and must	(% in weight)	75.4	66.3	77.9
must yield	(% in volume/ weight)	67.6	60.5	71.4
Chemical must composition				
sugars	° Brix	21.86	20.30	23.90
total acidity	g/l	8.24	6.10	9.02
pH		3.17	3.00	3.36
tartaric acid	g/l	6.59	5.20	7.53
malic acid	g/l	3.66	2.88	4.31
potassium	g/l	1.31	0.98	1.89

Average data relative to the analysis of secondary metabolite profiles (aglycone flavonols, glycoside antocyanins and cinnamic acids of fruits) that characterise the variety's compositional phenotype.

## Wine Analysis.

Origin of grape: Vineyard in S. Michele a./A. (S. Donà) vintage years 2004-2010.

IASMA ECO 1				
Values				
		Average	Limit v.	
		v.	Min	max
alcohol content % vol.		12.68	11.94	13.46
total acidity in tartaric acid g/l		5.12	4.75	6.02
dry extract g/l		28.90	26.80	32.40
pH		3.63	3.48	3.95
total antocyanins (mg/l such as malvidin 3-monoglucoside chloride)		1061	884	1219
total polyphenols mg/l (+) catechin		2299	1765	2478

## BEHAVIOUR IN VEGETATIVE MULTIPLICATION

Grafted vine affinity with the most popular holders—good.

## CULTIVATION CHARACTERISTICS AND SUITABILITY

The present invention vine variety shows good vigour with early sprouting stage, with blue-black, long, elliptic berry with medium thickness skin. The bunch is long, winged, conical and straggly. It has an abundant yield and is highly resistant to *Botrytis*. Its late physiological maturity occurs in the third or fourth stage; it shows an excellent capacity to accumulate sugars while preserving medium-high acidity values. It can perfectly stand winter cold and shows a good resistance to downy mildew and powdery mildew. It prefers quite fertile hilly soils, but it perfectly copes with less fertile soils.

## USE

The present invention vine variety is suited to produce both young and medium aged red wines. Young wines have a fruity taste (wild fruit and morello cherry). When slightly aged, spicy flavours become more accentuated; it shows a good acidic strength, also in case of small crops and particularly warm vintage years. The wines obtained from this vine variety show an excellent and deep ruby colour, good body, medium-high alcohol content, good texture and medium acidic strength. It is suitable to produce both young and medium-aged wines; maturing in wood and ageing create a more austere character, which is typical of noble red wines, with more spicy flavours that recall tealeaves. It can also be successfully used to cut other wines.

The invention claimed is:

1. A new and distinct variety of grapevine as herein illustrated and described.

\* \* \* \* \*



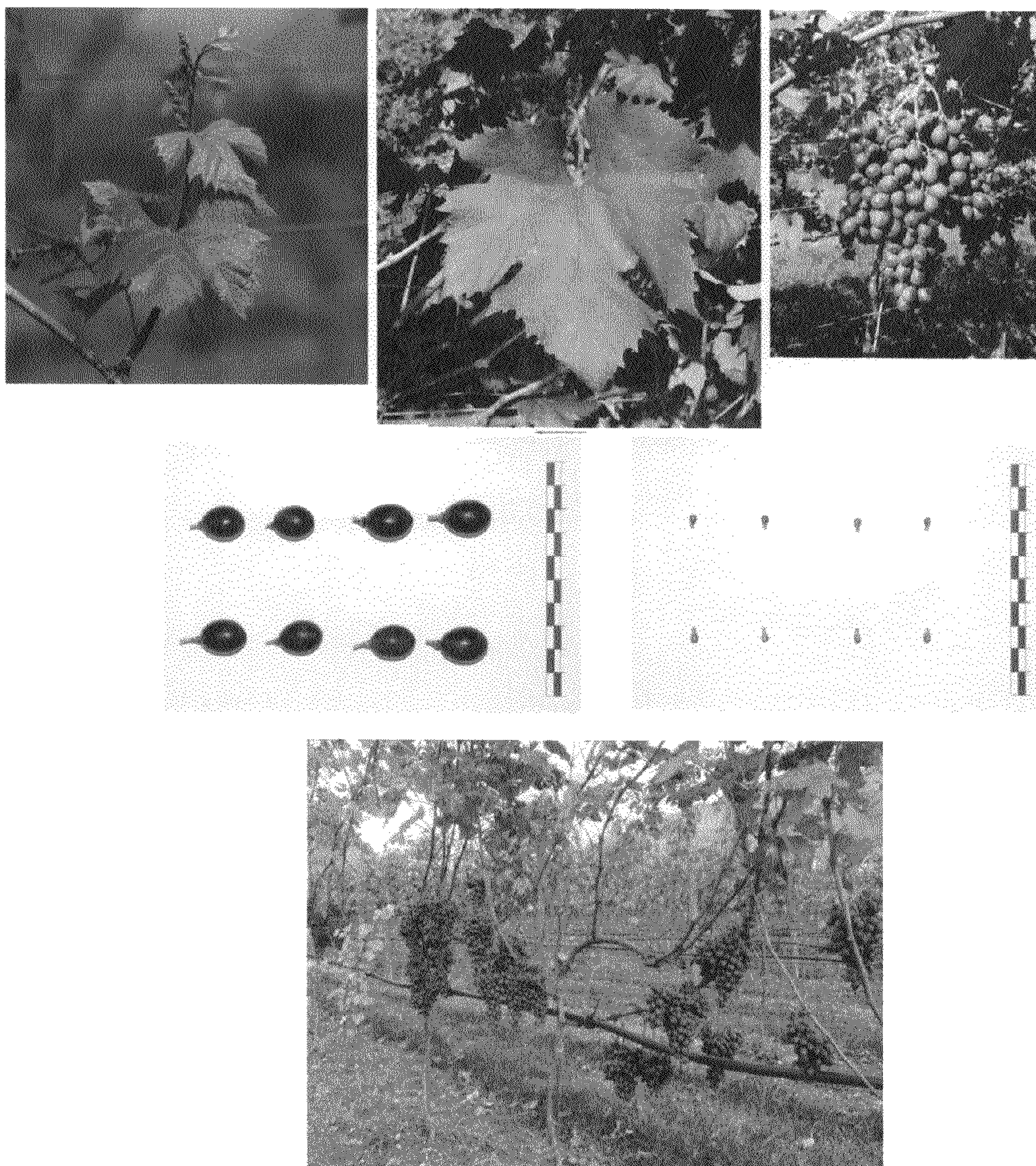


FIG. 1



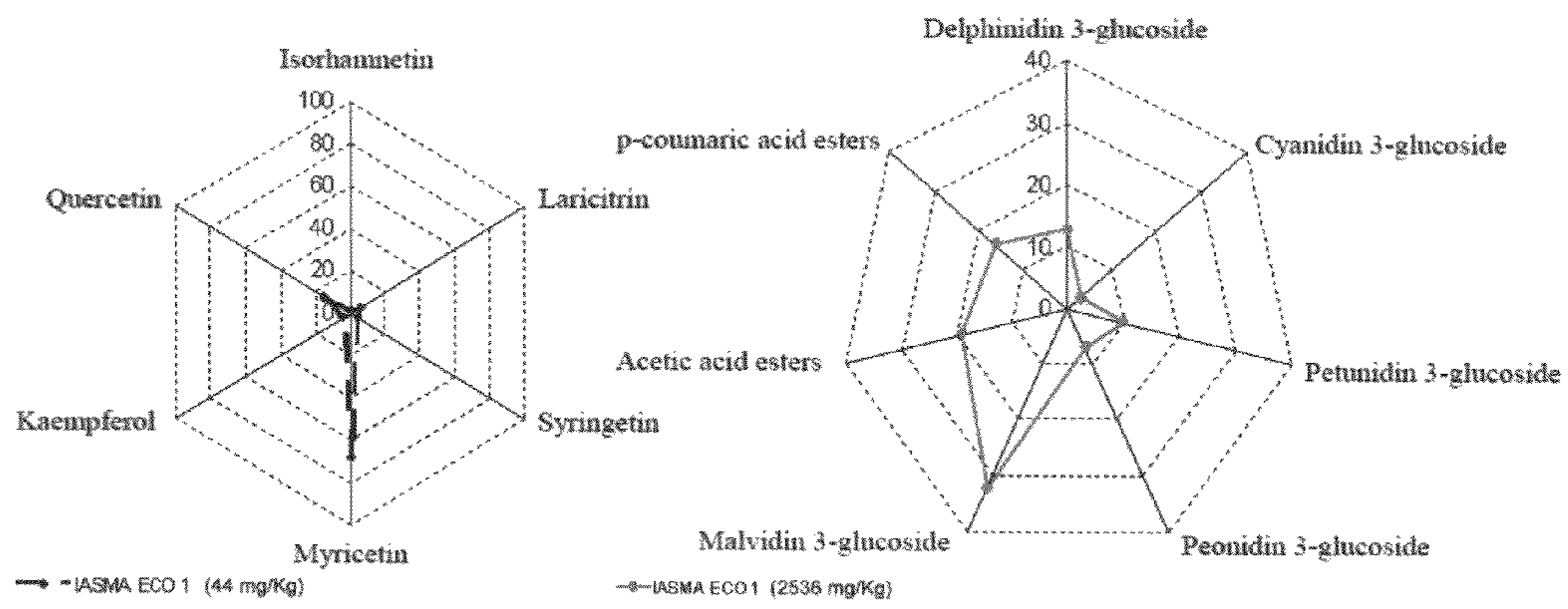


FIG. 2

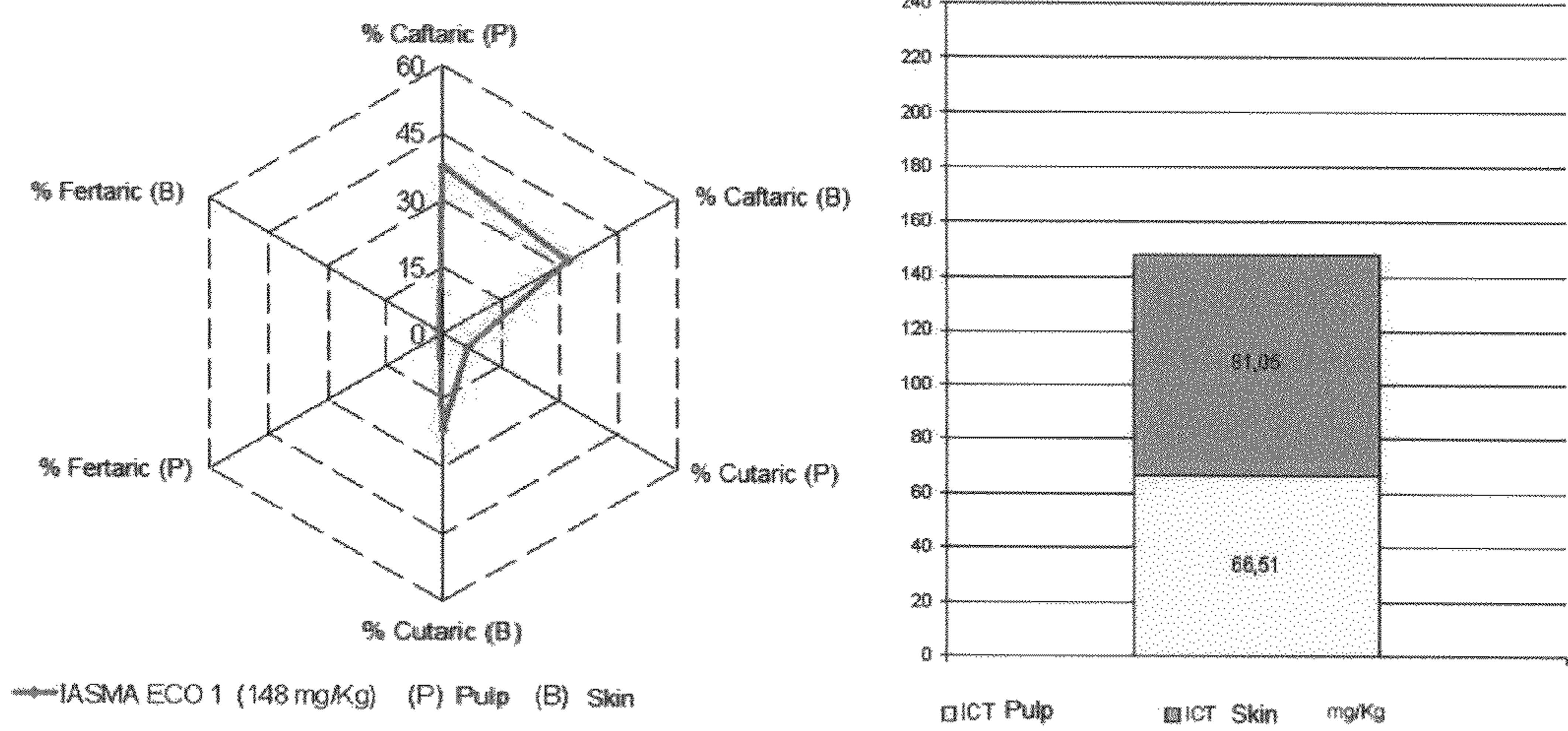


FIG. 3