　　　　　　　　　　　,　　　　　　,
　　　　　　　　　　　(　　　　　　)

　　　　　：　　　　　　　　　　　　　　　　　　　，
　　　　　　　　　：　　　　　　　　B2C3A2,　　2　　40%　　　　　　　　　　3
　　(　　2 h)
　　　：　　;　　　　　　;　　;　　　;
　　　：S377　　　　　　　：A　　　　　：100226819(2002)0120142203

　　　　(Pogadatree flowers)
(Sophora japonica L)　　　　　　　,
　　　　　　　　　　　　(　，　　　1)
rutin),　　　　,
　　　　　　　　,
　　　　14%　　　　　　，
　　　　，　　　　　　　　　"
,　　,　　";　　　　　"　　，
";　　　　　　"　　，　　，
　　"[1]
　，
　　　　　　　，
　，　　　　　　　，
，　　　　，　　　，
　　　　　[1, 2]
　，
　　　　　[2　7],

　　　　　　　　(
　　　)
　　　，
　，

1

1. 1
　　：　，　　　　　　　; NaNO2
AL(NO3)3 NaOH 95%　(　A. R　)
　　：724　　(　　　　　);
　　TG328B　(　　　　　　);
　101A1　(　　　　　　　); 　;

1. 2
1. 2 1
　　：

　　2)　　：　　　50 60 70 80　　90
　　　，　　5 g　　　　　，
　　，　　10　　　　1 h,　　8
　　0. 5 h,　　　　，　　50
mL
　　3)　　：5 g　　　，　　　，
　　10　　8　　　，
　　，　　1 h,　　0. 5 h
　　，　　50 mL
　　4)　　　：5 g　　，　　pH
8 9 10　11 NaOH　　　，　80
　　　10　　1 h,
8　　0. 5 h,　　　　，
50 mL
1. 2 2　　　　　　　[3, 4]
　　　　　　　　　　　　　　K
= 500 nm　　　　，　　——
　　，　　　　：
$Y = 0. 1026A - 0. 00195$　　　$r = 0. 9999$
Y——　　　，gөL; A——
1. 2 3
　　　　100 mL　　　，
　　，　　0. 4 mL
　　10 mL　　，30%　5
mL,　0. 28 mL NaNO2(1　20),　，5
min　0. 28 mL AL(NO3)3(1　10), 6 min
　2 mL 1 moLөL　NaOH　，　，
30%　　，10 min　500 nm

,

$$(\%) = [(Y \times 10 \times 100) \div (0.4 \times 5 \times 1000)] \times 100 = Y \times 50$$

Y: ,

1.3

,

,

,

2

2.1

20% 40% 60% 80% , 60 mL 1 10 g 1 h,
1.2 3 1
表1

Table 1　Effect of alcohol content on extracting result of Flavonoid

÷%	20	40	60	80
	1.769	2.116	1.897	1.886

: 40%

2.2

1 2 3
1 h, 2 :
2

表2

Table 2　Effect of solvent volume on extracting result of Flavonoid

	1	2	3
	2.116	2.520	2.350

2.3

2 40%
3 :
2 h , ,
, ,
, ,

2.4

2.4.1

1 , 5 g 5 ,
50 mL 30 mL 50 60 70 80 90

表3

Table 3　Effect of backwatering time on extracting result of Flavonoid

÷h	1	2	3	4
	2.177	2.420	1.943	1.527

, ,
, ,

图1
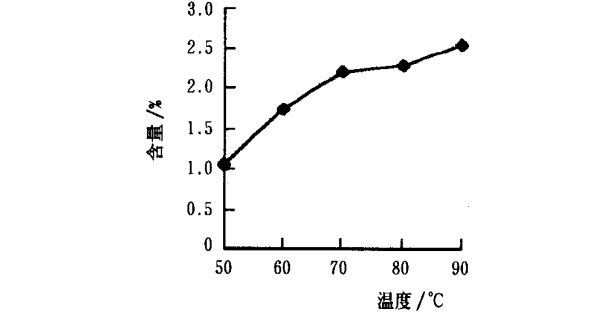
Fig.1　Effect of temperature on water extracting method

2.4.2 pH

2 , 5 g 4 , 80
pH 8 9 10 11 NaOH
1 h 0.5 h pH ,
, ; pH 11
, NaOH
, pH 10

图2 80 pH
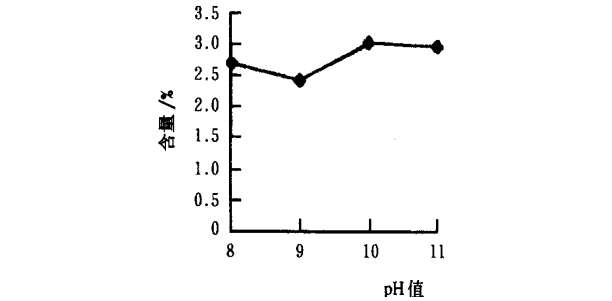
Fig.2　Effect of pH value on water extracting method

2.4.3

3 , 5 g 3 ,
90

pH 10 NaOH 80
1 h 0.5 h 80 , pH
10 ; 90

,

, , ,
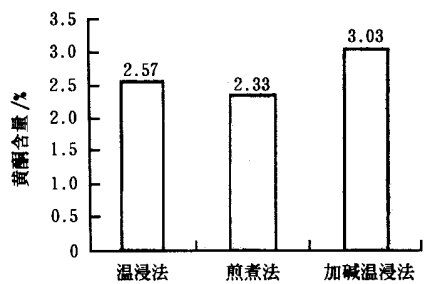
图 3
Fig. 3　Comparison of different water extracting method

2 5

3　　3　　　　　，　　　　　4
：
B 2C 3A 2,
2　40%　　　3　（　　2 h），
：　　　　　　　　；
13. 04%

4　L₉3³

Table 4　The result and analysis of L₉3³ orthogonal experiment of alcohol extracting method

	( )	Ö%		Y Ög₁ L⁻¹	( ) Ö%
1	1(1)	20(1)	2(2)	2. 507	0. 255 3	12. 77
2	1(1)	40(2)	1(1)	2. 301	0. 234 1	11. 71
3	1(1)	60(3)	3(3)	2. 456	0. 250 0	12. 50
4	2(2)	20(1)	1(1)	1. 485	0. 150 4	7. 52
5	2(2)	40(2)	3(3)	2. 560	0. 260 7	13. 04
6	2(2)	60(3)	2(2)	2. 320	0. 236 0	11. 80
7	3(3)	20(1)	3(3)	1. 875	0. 192 4	9. 62
8	3(3)	40(2)	2(2)	2. 260	0. 230 0	11. 50
9	3(3)	60(3)	1(1)	2. 248	0. 228 7	11. 44

	(A)	(B)	(C)
É	18. 47	14. 91	15. 32
°	16. 16	18. 08	18. 01
，	16. 21	17. 85	17. 51
Q	288. 35	289. 27	288. 55
S	1. 16	2. 08	1. 36
P	287. 19		

(S)	(f)	S Öf	F	
1. 16	2	0. 58	1	F₀.₀₅(2, 2) = 19
2. 08	2	1. 04	1. 79	F₀.₀₁(2, 2) = 99
1. 36	2	0. 68	1. 17	F₀.₁(2, 2) = 9
4. 60	6			F₀.₂(2, 2) = 4

3

，　　　　　　80
，pH　　　10
：
：B 2C 3A 2,　　　2　　40%
3　（　　2 h)
13. 04%,　　　　　6. 06%　　　，

，　　　　　　　，　　　　，
，　　　　　　　　　，
，
，
，

[　　　　　　　　　]
[1]　　　　　　　　　.　　　　　　[M].　　：
　　　，1997. 2433　2434
[2]　　　　　　.　　　　　　　　　[J].　　　，1995
　　(3): 163　165.
[3]　　　　　.　　　　　　　　　[J].　　　　，2000
　　(3): 33　34.
[4]　　　　　.　　　　　　　　　　[J].　　　　，1998
　　(3): 54　56.
[5]　　　　　.
　　[J].　　　　　，1996(2): 47　48
[6]　　　　　.
　　[J].　　　，1999(12): 35　37.
[7]　　　　　　.　　　　　　　　　　[J].
　　，2000, 16(6): 118　122

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Key words: m altogenase; β2enzym e; ex trem ely h igh m alto se syrup

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Abstract: Starch paste clarity and the effects of m o lecu lar structure, retrog radation and som e food ing redients such as N aC l, sucro se and citric acid w ere investigated. T he experim ental resu lts indicate that the starch m o lecu lar structure is the p rincipal facto r to influence the starch paste clarity. N aC l w as p roved to be ab le to reduce starch paste clarity, and sucro se, citric acid are p roved to be ab le to increase the clarity. D uring the in itial sto rage period（4 , 0 4 d）, the clarity decreased abrup tly, then it g radually decreased to its m in im um as the leached2but am ylose comp letely fo rm ed a three2dim ensional netwo rk w ith am ylopectin em bedded in and reinfo rced to the interpenetrating am ylo se gel m atrix.

Key words: starch paste; clarity; m o lecu lar structure; food ing redient; retrog radation

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Abstract: In this paper the influence of the param eters of the ex trusion system of rice used as beer adjunct on indexes observed w as studied by experim ents in the labo rato ry. T hese param eters are the diam eter of nozzle, barrel temperature, moisture content of rice and screw speed. The indexes include to tal reduced sugar concentration and filtration rate. T he research resu lts indicate that the ex truded rice can be used as beer adjunct.

Key words: rice; ex tru sion; beer adjunct

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Abstract: T he exp lo ition of the loo se crop m aterial needs comp ression p rocess. To determ ine the structural param eters and op tim ize the design of comp ression equipm ent, the law of comp ression p rocess, the relation ship among m ain param eters in the w ho le comp ression p rocess and the characteristerics of the m aterial to be comp ressed are investigated. B ased on the ach ievem ent acqu ired by our research g roup, a basic law of the stress and strain variation pattern w as obtained by use of advanced m easu ring m eans, w h ich p rovided a theo retical basis fo r the further study and op tim um design of comp ression equipm ent.

Key words: crop m aterial; rheo logy; comp ression

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Abstract: Patrin ia V illo sa（P. V. ）can cure diarrhea, but it can also do good to con stipation. N ot on ly the leaves and the stem s can relax the con stipation, but also the w ater2so lu tion ex tracted from P. V. has the sim ilar function. In o rder to know the effective ing redients to p revent and cu re con stipation ex tracted in the w ater2so lu tion, the ex traction techno logy of so luble po lysaccharides from w ild P. V. w as studied, and single facto r test and o rthogonal experim ent design m ethods（L$_9$(3^3)）w ere app lied to analyze the influence of each facto r in so lid2liqu id ratio, temperature and tim e on the ex traction percent of the po lysaccharides from the w ater so lution of P. V.. Experim ental resu lts indicated that temperature and so lid2liqu id ratio sign ifican tly affect the ex traction percent of the so luble po lysaccharides. T he op tim um so lid2liqu id ratio is 1 20, temperature is 100 and the ex traction tim e is 6 hours. In th is condition, the ex traction percent of so lub le po ly saccharides is 2 58%.

Key words: patrin ia villo sa; so lub le po lysaccharides; ex traction techno logy; content m easu rem ent; pheno l2su lfate m ethod; con stipation

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Abstract: The extraction of the flavonoid from Pagodatree flow er w ith w ater system and alcoho l2w ater backw atering system w as studied. W ith w ater extracting m ethod, the effect of temperature, pH value, and different techno logy w as studied. W ith alcohol extracting m ethod, through the orthogonal experim ent, the op tim um technical condition is obtained. The results show ed that the op tim um techno logy of extracting flavonoid from the Pagodatree flow ers is B2C3A 2, nam ely, 2 tim es volum e 40% alcoho l2 w ater, 3 extracting tim es (2 hö each tim e), and the content of flavono id is 13. 04% .

Key words: pagodatree flow ers; op tim um technical conditions for extraction; backw atering; o rthogonal experim ent; flavono id

· Agricultural Electronics and Information Technology·

Information Processing System for Precision Agriculture Based on GPS and GIS　… （145）

He Yong, Fang Hui, Feng L e i　(*College of A gricultural Engineering and Food S cience, Zhejiang University, H angzhou* 310029, *Ch ina*)

Abstract: To acqu ire spatial info rm ation quick ly and analyze it p roperly, an info rm ation p rocessing system w hich usesM apO b jects to integrate GPS w ith G IS is researched. This info rm ation p rocessing system has the function of visualizing and analyzing spatial data, show ing and track ing moving po int and calculating area of closed po lygon. It can integrate GPS and G IS into Expert System and D ecision Support System perfectly. A new w ay of info rm ation p rocessing and a new model of info rm ation p rocessing system fo r the research of p recision agricu lture are pu t fo rw ard.

Key words: p recision agricu lture; G IS; GPS; info rm ation p rocessing systtem

Fuzzy Pattern Recognition Method Based on Image Contour L ine　…………………… （150）

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Abstract: A simp lified m ethod w as put fo rw ard on a binary im age contour line extraction. D istance betw een centro id and do ts on contour line w as calculated, and based on the m ax im um centro id2do t distance, a feature victo r including tw elve direction segm ents and lengths of contour line w as studied in th is paper, and two distance algo rithm s based on euclid distance w ere p romo ted. The experim ental resu lts show that the co rrect recognition ratio s on three k inds of paddy seed reach respectively 79. 89% , 89. 63% and 93. 27% . This m ethod can also be app lied to fuzzy pattern recognition on fruits, m ach ine parts etc . A s random of object's lay direction and side w ere taken into account in th is paper, and objects are recognized at the sam e direction and on the sam e side, so th is m ethod can also be p romo ted to the op tic m easurem ents on object ro tation angle and any p reindicated geom etrical param eters

Key words: paddy seed; im age; contour line; fuzzy pattern recogn ition

Measuring Area of L eaves Based on Computer Vision Technology by Reference Object　………………………………………………………………………………………… （154）

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Abstract: A m ethod of m easuring area of leaves by reference object based on compu ter vision techno logy w as studied. The samp ling box of live leaves w as developed, and its data w ere op tim ized. The m easurem ent p rocess w as studied. The reference object w as segm ented from the o riginal im age by the m ethod of th resho ld. The data of th resho ld w as gained by m eans of derivation. The w ay of rem oving the no ises in the im age w as studied. Generally, the resu lts show that th is m ethod has better feasibility, higher p recision and h igher efficiency.

Key words: leaf area; compu ter vision; m ethod of reference object; m easurem ent

Reversible A irflow D ry ing System Based on Single-Ch ip Computer Control　……… （158）