

1 Acarbose Tablets

2 アカルボース錠

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4 Acarbose Tablets contain not less than 95.0% and not
5 more than 105.0% of the labeled amount of acarbose
6 ($C_{25}H_{43}NO_{18}$: 645.60).

7 **Method of preparation** Prepare as directed under Tablets, with
8 Acarbose.

9 **Identification** Perform the test with the sample solution and
10 standard solution obtained in the Assay as directed under Thin-
11 layer Chromatography <2.03>. Spot 2 μL each of the sample solu-
12 tion and standard solution on a plate of silica gel for thin-layer
13 chromatography. Develop the plate with a mixture of 1-butanol,
14 ethanol (95) and water (9:7:4) to a distance of about 8 cm, and dry
15 the plate at 105°C for 15 minutes. Spray evenly thymol-sulfuric
16 acid-methanol TS for spraying on the plate, and heat at 105°C for
17 15 minutes: the spots obtained from the sample solution and stand-
18 ard solution show a red-purple color and the same R_f value.

19 **Purity** Related substance—Perform the test with 10 μL of the
20 sample solution obtained in the Assay as directed under Liquid
21 Chromatography <2.01> according to the following conditions.
22 Determine each peak area by the automatic integration method,
23 and calculate the amount of them by the area percentage method:
24 the amount of the related substance A having the relative retention
25 time of about 0.9 to acarbose is not more than 2.0%, and the total
26 amount of the peaks other than acarbose, the related substance D
27 having the relative retention time of about 0.5 to acarbose, the re-
28 lated substance B having the relative retention time of about 0.8,
29 the related substance C having the relative retention time of about
30 1.2, the related substance E having the relative retention time of
31 about 1.7, the related substance F having the relative retention
32 time of about 1.9 and the related substance G having the relative
33 retention time of about 2.2 is not more than 3.0%. For the peak
34 areas of the related substance D, B, E, F and G, multiply their re-
35 lative response factors, 0.75, 0.63, 1.25, 1.25 and 1.25, respectively.

36 *Operating conditions* —

37 Detector, column, column temperature, mobile phase and flow
38 rate: Proceed as directed in the operating conditions in the Assay.

39 Time span of measurement: About 2.5 times as long as the
40 retention time of acarbose.

41 *System suitability* —

42 Test for required detectability: To 1 mL of the standard solution
43 obtained in the Assay add water to make 100 mL, and use this
44 solution as the solution for system suitability test. Pipet 5 mL of
45 this solution, and add water to make exactly 50 mL. Confirm that
46 the peak area of acarbose obtained with 10 μL of this solution is
47 equivalent to 7 to 13% of that obtained with 10 μL of the solution
48 for system suitability test.

49 System performance: When the procedure is run with 10 μL of
50 the solution for system suitability test under the above operating

51 conditions, the number of theoretical plates and the symmetry
52 factor of the peak of acarbose are not less than 1500 and not more
53 than 2.0, respectively.

54 System repeatability: When the test is repeated 6 times with 10
55 μL of the solution for system suitability test under the above
56 operating conditions, the relative standard deviation of the peak
57 area of acarbose is not more than 1.5%.

58 **Uniformity of dosage unit** <6.02> Perform the Mass variation
59 test, or the Content uniformity test according to the following
60 method: it meets the requirement.

61 To 1 tablet of Acarbose Tablets add exactly V mL of water so
62 that each mL contains about 10 mg of acarbose ($C_{25}H_{43}NO_{18}$),
63 shake thoroughly until the tablet is completely disintegrated, and
64 centrifuge. Filter the supernatant liquid through a membrane filter
65 with a pore size not exceeding 0.45 μm , discard the first 3 mL of
66 the filtrate, and use the subsequent filtrate as the sample solution.
67 Then, proceed as directed in the Assay.

$$68 \quad \text{Amount (mg) of acarbose (C}_{25}\text{H}_{43}\text{NO}_{18}\text{)} \\ 69 \quad = M_S \times A_T/A_S \times V/10$$

70 M_S : Amount (mg) of Acarbose RS taken, calculated on the an-
71 hydrous basis

72 **Dissolution** <6.10> When the test is performed at 75 revolutions
73 per minute according to the Paddle method, using 900 mL of water
74 as the dissolution medium, the dissolution rates in 15 minutes of
75 50-mg tablet and in 30 minutes of 100-mg tablet are not less than
76 85%, respectively.

77 Start the test with 1 tablet of Acarbose Tablets, withdraw not
78 less than 20 mL of the medium at the specified minute after start-
79 ing the test, and filter through a membrane filter with a pore size
80 not exceeding 0.45 μm . Discard the first 10 mL of the filtrate, pi-
81 pet V mL of the subsequent filtrate, add water to make exactly V'
82 mL so that each mL contains about 56 μg of acarbose
83 ($C_{25}H_{43}NO_{18}$), and use this solution as the sample solution. Sepa-
84 rately, weigh accurately about 28 mg of Acarbose RS (separately
85 determine the water <2.48> in the same manner as Acarbose), and
86 dissolve in water to make exactly 100 mL. Pipet 5 mL of this so-
87 lution, add water to make exactly 25 mL, and use this solution as
88 the standard solution. Perform the test with exactly 50 μL each of
89 the sample solution and standard solution as directed under Liquid
90 Chromatography <2.01> according to the following conditions,
91 and determine the peak areas, A_T and A_S , of acarbose in each solu-
92 tion.

93 Dissolution rate (%) with respect to the labeled amount of acar-
94 bose ($C_{25}H_{43}NO_{18}$)

$$95 \quad = M_S \times A_T/A_S \times V'/V \times 1/C \times 180$$

96 M_S : Amount (mg) of Acarbose RS taken, calculated on the an-
97 hydrous basis

98 C : Labeled amount (mg) of acarbose ($C_{25}H_{43}NO_{18}$) in 1 tablet

99 *Operating conditions* — 149

100 Detector: An ultraviolet absorption photometer (wavelength: 150

101 210 nm). 151

102 Column: A stainless steel column 4.6 mm in inside diameter 152

103 and 15 cm in length, packed with octadecylsilanized silica gel for 153

104 liquid chromatography (5 μm in particle diameter). 154

105 Column temperature: A constant temperature of about 40°C. 155

106 Mobile phase: Dissolve 0.60 g of potassium 156

107 dihydrogenphosphate and 0.70 g of disodium hydrogenphosphate 157

108 dodacahydrate in 1000 mL of water. To 950 mL of this solution 158

109 add 50 mL of acetonitrile for liquid chromatography. 159

110 Flow rate: Adjust so that the retention time of acarbose is about 160

111 2 minutes.

112 *System suitability* — 161

113 System performance: When the procedure is run with 50 μL of 162

114 the standard solution under the above operating conditions, the 163

115 theoretical plates and the symmetry factor of the peak of acarbose 164

116 are not less than 500 and not more than 2.5, respectively. 165

117 System repeatability: When the test is repeated 6 times with 50 166

118 μL of the standard solution under the above operating conditions, 167

119 the relative standard deviation of the peak area of acarbose is not 168

120 more than 2.0%.

121 **Assay** Weigh accurately the mass of not less than 20 Acarbose

122 Tablets, and powder. Weigh accurately a portion of the powder,

123 equivalent to about 0.1 g of acarbose ($\text{C}_{25}\text{H}_{43}\text{NO}_{18}$), add exactly

124 10 mL of water, shake for 10 minutes, and centrifuge. Filter the

125 supernatant liquid through a membrane filter with a pore size not

126 exceeding 0.45 μm , discard the first 3 mL of the filtrate, and use

127 the subsequent filtrate as the sample solution. Separately, weigh

128 accurately about 0.1 g of Acarbose RS (separately determine the

129 water <2.48> in the same manner as Acarbose), dissolve in exactly

130 10 mL of water, and use this solution as the standard solution. Per-

131 form the test with exactly 10 μL each of the sample solution and

132 standard solution as directed under Liquid Chromatography

133 <2.01> according to the following conditions, and determine the

134 peak areas, A_T and A_S , of acarbose in each solution.

135 Amount (mg) of acarbose ($\text{C}_{25}\text{H}_{43}\text{NO}_{18}$) = $M_S \times A_T / A_S$

136 M_S : Amount (mg) of Acarbose RS taken, calculated on the an-

137 hydrous basis

138 *Operating conditions* —

139 Detector: An ultraviolet absorption photometer (wavelength:

140 210 nm).

141 Column: A stainless steel column 4 mm in inside diameter and

142 25 cm in length, packed with aminopropylsilanized silica gel for

143 liquid chromatography (5 μm in particle diameter).

144 Column temperature: A constant temperature of about 35°C.

145 Mobile phase: Dissolve 0.60 g of potassium

146 dihydrogenphosphate and 0.70 g of disodium hydrogenphosphate

147 dodacahydrate in 1000 mL of water. To 260 mL of this solution

148 add 740 mL of acetonitrile for liquid chromatography.

Flow rate: Adjust so that the retention time of acarbose is about 16 minutes.

System suitability —

System performance: When the procedure is run with 10 μL of the standard solution under the above operating conditions, the theoretical plates and the symmetry factor of the peak of acarbose are not less than 1500 and not more than 2.0, respectively.

System repeatability: When the test is repeated 6 times with 10 μL of the standard solution under the above operating conditions, the relative standard deviation of the peak area of acarbose is not more than 1.5%.

Containers and storage Containers — Tight containers.

Others

Related substances A, B, C, D, E, F and G: Refer to them described in Acarbose.

Add the following to 9.01 Reference Standards (1) :

Acarbose RS