

SORGO
Tanniinisalduse määramine

Sorghum
Determination of tannin content

EESTI STANDARDI EESSÕNA**NATIONAL FOREWORD**

Käesolev Eesti standard EVS-ISO 9648:2003 "Sorgo. Tanniinisalduse määramine" sisaldab rahvusvahelise standardi ISO 9648:1988 "Sorghum - Determination of tannin content" identset ingliskeelset teksti.	This Estonian Standard EVS-ISO 9648:2003 consists of the identical English text of the International Standard ISO 9648:1988 "Sorghum - Determination of tannin content".
Standardi avaldamise korraldas Eesti Standardikeskus.	Estonian standard is published by the Estonian Centre for Standardisation.
Standard EVS-ISO 9648:2003 on kinnitatud Eesti Standardikeskuse 30.01.2003 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teataja 2003. aasta veebruarikuu numbris.	This standard is ratified with the order of Estonian Centre for Standardisation dated 30.01.2003 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from Estonian Centre for Standardisation.

Käsitlusala

Standard sätestab üldmeetodi sorgo tanniinisalduse määramiseks.

See ei ole spetsiifiline ühele kindlale polüfenoolide tüübile. Selle sobivus kasutamiseks on põhjendatud usaldusväärse negatiivse korrelatsiooniga, mis on tuvastatud tulemuste vahel, millised on saadud mõõtes sorgo metaboliseerivat energiat loomkatsetel kultkedega ja käesolevat meetodit kasutades.

ICS 67.060 Teravili, kaunvili ja nendest valmistatud tooted

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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 9648 was prepared by Technical Committee ISO/TC 34, *Agricultural food products*.

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Sorghum — Determination of tannin content

1 Scope

This International Standard specifies a universal method for the determination of tannin content in sorghum grains.

It is not specific for one single type of polyphenols. Its usefulness, meanwhile, is justified by the good negative correlation observed between the metabolizable energy of sorghum grain, measured using animal experiments on cocks, and the results obtained using this method.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 712 : 1985, *Cereals and cereals products — Determination of moisture content (Routine reference method)*.

ISO 950 : 1979, *Cereals — Sampling (as grain)*.

3 Principle

Extraction of tannins by shaking with dimethylformamide. After centrifuging, addition of ferric ammonium citrate and ammonia to an aliquot part of the supernatant liquid and spectrometric determination, at 525 nm, of the absorbance of the solution thus obtained. Determination of the tannin content using a calibration curve prepared using tannic acid.

4 Reagents

All reagents shall be of analytical grade. The water used shall be distilled water or water of at least equivalent purity.

4.1 Tannic acid, 2 g/l solution.

Since the origin of tannic acid has a definite influence on the calibration curve, the use of Merck reference 773 tannic acid¹⁾

is recommended in order to permit inter-laboratory comparison of results.

This solution can be kept for 1 week.

4.2 Ammonia, solution of 8,0 g/l NH₃.

4.3 Dimethylformamide, 75 % (V/V) solution.

Introduce 75 ml of dimethylformamide into a 100 ml volumetric flask. Dilute with water, allow to cool and make up to the mark.

WARNING — Dimethylformamide may be harmful to the health when inhaled or allowed to come into contact with the skin. It is also irritating to the eyes.

4.4 Ferric ammonium citrate, having an iron content between 17 % (m/m) and 20 % (m/m), 3,5 g/l solution, prepared 24 h before use.

Since the iron content of the citrate has an influence on the results, this content shall be respected imperatively.

5 Apparatus

Usual laboratory apparatus and, in particular, the following.

5.1 Mechanical crusher, capable of producing particles which pass completely through the sieve (5.2).

5.2 Sieve, having apertures of size 0,5 mm.

5.3 Centrifuge, capable of producing a centrifugal acceleration of 3 000g (3 000 × 9,81 m/s²).

5.4 Centrifuge tubes, with a capacity of approximately 50 ml, provided with stoppers ensuring hermetic sealing.

5.5 Mechanical stirrer, with a reciprocating motion, or magnetic stirrer.

5.6 Mechanical shaker for test tubes (Vortex type).

1) Merck reference 773 tannic acid is an example of a suitable product available commercially. This information is given for the convenience of users of this International Standard and does not constitute an endorsement by ISO of this product.