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Nutritional Labelling Proficiency testing scheme description 2020-21

NMISA-PT-59

Fatty acids and peroxide value in peanuts and peanut oil

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1 FOREWORD

This is the call for participation in the NMISA proficiency testing (PT) scheme for the determination of fatty acids and peroxide value in peanuts and peanut oil. Participants will be required to report on all parameters which form part of their routine laboratory services. A confidential report will be issued to all participants after completion of the PT scheme. Information on the parameters included, dates for the registration, distribution and reporting are listed in Table 1.

This forms part of a range of ISO 17043 accredited PT services offered by NMISA. Please consult our website www.nmisa.org for information on PT schemes on offer. NMISA can also assist with the preparation of traceable gravimetrically prepared spike solutions for benchmarking *ad-hoc* analyses for which commercial PT schemes are not available.

2 SCHEME AIMS

This scheme will assist laboratories that routinely analyse free fatty acids and peroxide value in oil to monitor their laboratory performance. Furthermore, the addition of a whole peanut sample to the PTS, will allow laboratories to evaluate their oil extraction efficiency.

The PTS allows laboratories to evaluate their accuracy and comparability of measurement results produced; the continued competency of analytical staff; and the maintenance and effectiveness of the current quality assurance systems within the laboratory. In addition, this information may also be used to provide accreditation bodies or clients with objective evidence of laboratory performance.

3 PARTICIPATION FEES AND ADDITIONAL CHARGES

The cost of participation in the PT scheme R 3 200 (R 1 600 for each sample). These rates exclude costs associated with delivery (0% VAT, please note that we are not a VAT registered company). This fee includes the materials and a confidential report upon completion.

Since many of the South African participants are located within close proximity to NMISA, the option of collecting the PT scheme samples from NMISA premises is permitted.

International laboratories will have test samples sent by courier and appropriately packaged to maintain sample integrity. International participants must provide NMISA with any import or quarantine permits that might be required to complete sample delivery well in advance of the shipment date and are liable for any customs or import duties charged.

Upon registration for participation an official quotation will be provided.

4 PT SCHEME DESCRIPTIONS

The timeline for the PTS is presented in Table 1. Laboratories are requested to report results for as many of the parameters specified as possible, to allow for maximum benefit to be obtained from the participation. This study is designed to support laboratories routinely performing nutritional labelling/food quality measurements. The levels of the analytes should be easily achievable using analytical methods typically applied, however, higher variations in participant results are expected for the whole peanut sample due to the inhomogeneity of whole peanut samples and oil extraction efficiencies. Instructions for proper handling and storage of the samples prior to sample preparation will accompany the PT scheme samples. Participants should adhere to these instructions to ensure sample integrity.

Table 1: PTS details for NMISA-PT-ORG59 fatty acids and peroxide value in peanut oil and whole peanuts.

NMISA-PT-ORG59 Fatty acid content and peroxide value of peanut oil and whole peanuts		Sample format	Distribution/ Dispatch	Result reporting
Parameters	<p>Fatty acids at levels typically expected in peanut oil: Palmitic acid (C16:0), stearic acid (C18:0), oleic acid (C18:1 n-9 cis), linoleic acid (C18:2 n-6) , linolenic (C18:3), arachidic acid (C20:0), eicosenoic acid (C20:1), behenic acid (C22:0) and lignoceric acid (C24:0).</p> <p>Peroxide value</p>	<p>Sample 1: 50-100 mL oil</p> <p>Sample 2: 10-50 g whole peanuts</p>	Feb 2021	Mar 2021
Result Reporting	<p>Participants will be required to perform the analysis using their normal laboratory procedures and are required to report two results for all selected parameters measured in both samples provided for meaningful PTS statistical analysis.</p> <p>Participants are encouraged to include an uncertainty estimate for each result obtained. The result reporting form will be distributed to participants and will request additional information on the measurement technique and parameters, any recovery correction application, calibration standards used etc.</p>			
PT conduct	<p>Assigned value</p> <p><i>Sample 1: Peanut Oil</i></p> <ul style="list-style-type: none"> The assigned value for the fatty acids will be the values obtained through GC-FID/MS analysis at the NMISA Organic Analysis Laboratory. The assigned value for the peroxide value will be the values obtained by titrimetry at the NMISA Organic Analysis Laboratory. <p><i>Sample 2 : Whole peanuts</i></p> <ul style="list-style-type: none"> The assigned values for the fatty acids and the peroxide value in the whole peanuts will be the consensus values determined from participant results in accordance with ISO 13528:2017 statistical principles. <p>Laboratory performance</p> <ul style="list-style-type: none"> Laboratory performance will be evaluated using the z-score <p>Standard deviation of proficiency assessment</p> <ul style="list-style-type: none"> Where applicable, the standard deviation for proficiency assessment will be in accordance with the tolerances stipulated in section 3 of Guideline 5 referred to in the South African regulations related to food labelling (R146). Where no prescribed tolerances are available, NMISA may use the Horwitz model to estimate a standard deviation that can typically be expected. The standard deviation of participant results will also be included in the final PT report for reference. <p>PT report</p> <ul style="list-style-type: none"> The PTS report will be distributed within 1 week following the result submission deadline. Reports will be provided in electronic format only (Adobe Acrobat- pdf) files. The scheme is fully confidential. Each participant will be issued with a unique identification number. For multiple participants within the same laboratory the participating laboratory is required to identify its analysts by a code known only to the laboratory. 			