

New features for the CAMAG TLC-MS Interface



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Dear reader

TLC/HPTLC is a powerful tool, which is widely used, e.g. to decide on the progress of a chemical synthesis, the content of an active substance in a plant extract, the amount of degradation of a pharmaceutical, as well as for many other applications. TLC/HPTLC is often the first analytical method to be used, because it's easy to use and the separation medium is disposable. For a long time, attempts have been made to identify substance spots directly on the TLC plate, first by scraping-off and extracting the layer, later e.g. by coupling techniques like MALDI. Some years ago Dr. Heinrich Luftmann from the University of Münster/Germany developed an automatic extraction device for thin-layer sheets and showed its usability and its performance in different applications. Dr. Gerda Morlock, University of Hohenheim in Stuttgart, published several studies with the same type of instrument, modified it and popularized the concept.

She also published in JPC Vol. 21, 2008, a comparison of the circular and oval extraction head. The performance of both extraction heads was similar. However, the geometry of the extraction head had an effect on the selectivity of extraction. The geometry of the oval plunger, especially designed for band-shaped zones, resulted in a requirement for precise positioning on the band of interest to avoid co-detection of adjacent zones. It was shown that the oval plunger was more selective than the circular plunger. Consequently this plunger was recommended for the extraction of adjacent band-shaped zones.

News & Events

- **TLC-MS Interface** will be shown
18.09.2009 IT-Pavia
17.09.2009 CH-Basel
24.09.2009 DE-Berlin
01.10.2009 A-Wien
Details see:
www.camag.com/v/news/events.html
- **Stratum Corneum VI** (2009)
30.09. – 02.10.2009
Boston Sheraton Hotel, Boston
USA information:
www.stratumcorneum2009.com

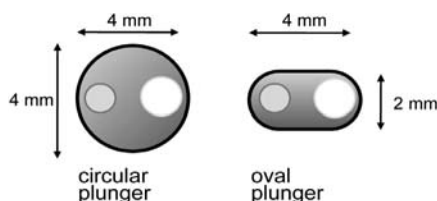
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Flash

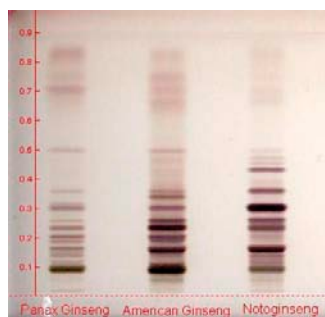
August 2009

TLC-MS Interface: A comparison of circular and oval extraction heads

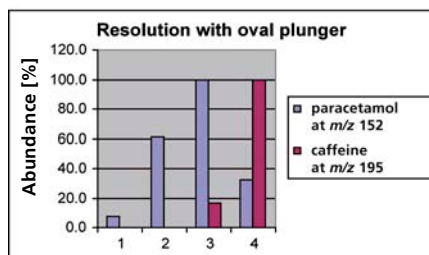
Extraction head with different plungers



The first experiments showed that the 4 mm round plunger head was a good compromise between resolution and sensitivity. However, there are other examples of separations (e.g. the separation of Ginsenosides below), where a higher resolution of the extraction head would be required to identify a majority of the substances, especially when zones are applied bandwise. The need for higher resolution from the extraction device is obvious.



We had the opportunity to test a new plunger with an oval shaped extraction head. For this test 20 mm bands of a so-



TLC-MS Interface



lution of 150 ng/μl paracetamol and caffeine in ethyl acetate were applied at different heights (18, 28 and 32 mm from the lower edge of the plate). The plate was then developed to a migration distance of 50 mm. With this procedure the caffeine and the paracetamol band were between 3.5 and 1.5 mm apart, depending on the effective migration distance.

For the comparison of the resolution of the round versus the oval extraction head, we used the two bands of caffeine and paracetamol, which were approximately 1.5 to 2 mm apart.

The sample zones were "scanned" by starting with the first extraction just above the paracetamol zone. For the next extraction, the head was moved 1 mm down and 5 mm to the left.

This procedure was continued till both bands were extracted.



The diagram with the abundance of m/z 152 (for paracetamol) and of m/z 195 (for caffeine) shows that with the oval plunger, the chance to get a spectrum of the pure isolated substance is given in both cases, whereas with the round plunger, we always extracted a mix of paracetamol and caffeine.

Further details and application examples at www.camag.com/tlc-ms

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