



File Format Specification

DFT

2006-06-26

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1 Change history

Revision	Date	Author	Description
1.0	26.6.2007	Vesa Oikonen, Calle Laakkonen	New document format, based on version 2007-01-10

2 Background

Several types of data in PET centers contain data collected at different times, e.g. [regional tissue time-activity curves \(TACs\)](#), [blood or plasma TACs](#), and [fractions of authentic tracer and its metabolites in plasma](#). Therefore a multipurpose data file format is needed. Lots of software need to read and write this data, and therefore a common, easily incorporated C code for these purposes is provided in [C libraries](#).

Files are saved in ASCII format for GPP reasons: the contents can be checked at any time without using specific software and test data can be easily produced. Data conversion for different platforms is usually not needed, or is very simple.

Software for [TAC format conversion](#) are provided.

3 Specifications

Datafile can contain one or more lines, which represent the separate samples (time points); lines end with line feed character. First one or two columns contain the sample time and the next one or more columns contain the numerical sample values measured at the specified time. Columns are separated with any number of spaces or tabs. Missing values or strings are represented with a single "." (period). Column widths can be varied.

Four (4) title lines include information about names and sizes of regions and the measurement units. As an identifier of file type, files *must start with string "DFT"*; there are no restrictions for the filename, but for clarity, extensions "*.dat" or "*.dft" are recommended. After the identifier, the first title line contains the names of regions, max 6 characters long, separated with spaces or tabs.

The second title line contains an identification string for the study, e.g. study number, which may be max 8 characters long. Following that, hemisphere or other secondary name for each (region) curve must be specified (max 6 chars), separated with spaces or tab (missing names can again be specified with a period).

The third title line contains the unit of measured numerical values (usually string "kBq/mL"), and after that the planes (slices) where regions were drawn (max 6 chars), or other preferred type of definition for regions.



Fourth title line starts with the string "Times", if frame start and end times are specified (PET data), or "Time", if only sample measurement times (plasma data) or mid times of PET frame are specified. After that, time unit is provided in parenthesis, as "(min)" or "(sec)" or "(s)". And after that, the [sizes of regions](#) in units mm^3 ($= \mu L$). Alternatively, strings "Times" and "Time" can be replaced by "Distances" or "Distance", and the units with strings "(um)" or "(mm)"; these are mainly used for technical purposes, e.g. in FWHM determination.

Columns which have been named as "weight" are not processed as other TAC columns, but are considered to contain relational weights for different time frames in model calculations and in fitting of mathematical functions to data.

All programs must be able to read also files with no title lines, containing only sample time (or mid time of PET frame) and the numerical values (usually blood or plasma data). In this case, programs should assume that times are minutes.

Datafiles can also contain comment lines that start with # as the first character of line. It is recommended, that all programs preserve old comment lines, and add a new comment line in the end, containing the date and time and the command line that was used to process the file.

Decimal point is always used as [decimal separator](#), although Finland is one of the decimal comma countries.

4 Examples

4.1 Typical PET TAC

```
DFT          putam putam cereb
exam0001     dx      sin      .
kBq/ml       pl18   pl18   pl29
Times (min)  675.2  712.8  9167.1
0.00 0.25   0.00e+00 -9.18e-03 2.98e-04
0.25 0.50   1.24e+00  1.11e+00  1.43e+00
0.50 0.75   4.68e+00  4.71e+00  5.22e+00
0.75 1.00   1.21e+01  1.15e+01  9.87e+00
1.00 1.50   1.89e+01  1.97e+01  1.03e+01
1.50 2.00   2.12e+01  2.56e+01  9.36e+00
2.00 3.00   2.45e+01  2.87e+01  8.69e+00
3.00 4.00   2.37e+01  2.67e+01  8.57e+00
4.00 5.00   2.68e+01  2.92e+01  6.99e+00
5.00 10.0   2.56e+01  .           7.05e+00
10.0 15.0   2.66e+01  2.80e+01  6.54e+00
# Example data for testing purposes
```

4.2 Typical plasma TAC (manual samples)

```
# Injection time: 24.04.2002 10:34:51
# Isotope: C-11
# Calibration coefficient: 0.002770
# Activity units: kBq/mL
# Time units: min
```



00.512	0.286
01.012	8.992
01.998	76.643
03.086	54.865
03.892	33.345
04.901	31.809
06.305	27.340
07.002	26.902
07.991	22.687
09.203	18.560
10.072	14.771
15.083	7.481
20.000	6.571
25.033	6.065
30.017	5.666
35.050	5.378
40.033	5.062
45.017	4.961
50.183	4.890