**Assessing contamination profiles in livers from road-killed owls**

**Table S1.** Biometric measurments of the collected roadkilled owls. Individuals were aged following Euring codes where 3 corresponds to birds in the 1st calendar-year of (juveniles), and other codes corresponds to individuals in their second of above calendar-year (adults). X corresponds to individuals not considered for chemical analyisis as the liver was severely damaged.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Specie** | **Sample Code** | **Wing (cm)** | **Tarsus (mm)** | **Bill (mm)** | **Mouth (mm)** | **Weight (g)** | **Wingspan (cm)** | **Body length (cm)** | **Ulna (mm)** | **Euring code** | **Sex** |
| Eagle owl | BB2 | 44 | 79.4 | 45.2 | 35.7 | 176 | 138 | 61 | 186 | A | Male |
| Eagle owl | BB3 | 44 | 79.7 | 43.5 | 41.2 | 152 | 144 | 59 | 177 | 3 | Male |
| Eagle owl | BB4 | 48.5 | 78.6 | 50.3 | 45.4 | 1640 | - | 60 | 192 | 5 | Female |
| Eagle owl | BB5 | 46 | 86.4 | 45.4 | 42.5 | 164 | - | 53 | 191 | 7 | Female |
| Eagle owl | BB6 |  |  |  |  |  |  |  | 176 | C | Male |
| Eagle owl | BB7 | 43.5 | 88.2 | - | - | 1740 | - | - | 190 | 3 | Male |
| Eagle owl | X | 48 | 87.3 | 49.8 | - | 2220 | - | - | 200 | 3 | Female |
| Eagle owl | X | 45 | 91.3 | - | - | 1680 | - | - | 206 | 3 | - |
| Long-eared owl | AO1 | 289 | 42.5 | 27.9 | 22.7 | 210 | - | - | 92.8 | 5 | Male |
| Long-eared owl | AO2 | 295 | 46 | 26.2 | 25.2 | 270 | - | - | 96.7 | 5 | Female |
| Long-eared owl | AO3 | 295 | 45.3 | 25.8 | 23.4 | 200 | - | - | 95.1 | 5 | Male |
| Long-eared owl | AO4 | 293 | 43.5 | 29 | 23.5 | 270 | 96 | 37.6 | 101.3 | 5 | Female |
| Long-eared owl | AO5 | 300 | Broken | 28.5 | 24.3 | 310 | - | - | 93 | 5 | Female |
| Long-eared owl | X | - | - | - | - | - | - | - | - | 3 | Male |
| Tawny owl | SA1 | 272 | 54.8 | 33.1 | 28 | 450 | 85 |  | 100.4 | 3 | Female |
| Tawny owl | SA2 | 270 | 59.5 | 32.27 | 30.4 | 520 | - |  | 106.5 | 5 | Female |
| Tawny owl | SA3 | 264 | 47.7 | 29.1 | 32.1 | 390 | - |  | 97.8 | 3 | Female |
| Tawny owl | SA4 | 259 | 56.4 | 30.3 | 26.3 | 390 | - |  | 96.3 | 7 | Male |
| Tawny owl | SA5 | 262 | 56.3 | 32.2 | 27.2 | 410 | - |  | 96.2 | 5 | - |
| Tawny owl | SA6 | 277 | 59.4 | 31.7 | 28.9 | 450 | - |  | 101.8 | 5 | Female |
| Tawny owl | SA7 | 265 | 50.7 | 29.4 | 26.6 | 390 | 92 | 39.5 | 9739 | 5 | Male |
| Tawny owl | SA8 | 268 | 52.4 | 32.6 | 27 | 460 | - | 39.5 | 102.2 | 9 | - |
| Tawny owl | SA9 | 268 | 51.8 | 33 | 28.6 | 410 | - | - | 100.7 | 3 | Female |
| Tawny owl | SA10 | 276 | 53 | 32.8 | 28.7 | 440 | 92 | 40 | 100.5 | 3 | Female |
| Tawny owl | SA11 | 270 | 52.7 | - | - | 380 | - | - | 96 | 3 | - |
| Tawny owl | SA12 | 274 | 53.4 | 32.8 | 27.2 | 500 | 95 |  | 106.2 | 6 | - |
| Tawny owl | X | 265 | 44.6 | 32.2 | 29 | 460 | - | - | - | 3 | - |
| Tawny owl | X | 275 | 54.4 | 32.6 | 27.9 | 420 | 92 | 37 | 104.1 | 3 | - |
| Barn owl | TA1 | 291 | 66 | 32.2 | 23.7 | 290 | - |  | 100.5 | 5 | - |
| Barn owl | TA2 | 285 | 64.4 | 31 | 24 | 250 | - |  | 101.1 | 3 | Male |
| Barn owl | TA3 | 293 | 68 | 34.4 | 23.4 | 430 | - |  | 102.9 | 5 | Female |
| Barn owl | TA4 | 296 | 64.5 | 33.4 | 23.7 | 320 | - |  | 100.7 | 5 | Female |
| Barn owl | TA5 | 280 | 60.6 | 32.5 | 21.2 | 330 | - |  | 99.1 | 5 | Female |
| Barn owl | TA6 | 286 | 59.3 | 31 | 23.5 | 250 | - |  | 96.7 | 3 | Female |
| Barn owl | TA7 | 287 | 62.4 | 31.6 | 25 | 280 | 92 | 31 | 98 | 3 | Female |
| Barn owl | TA8 | - | - | - | - | - | - | - | - | 5 | - |
| Barn owl | TA9 | 285 | 66.3 | - | - | 240 | - | - | 96.4 | 3 | Female |
| Barn owl | TA10 | 286 | 61.6 | 32.5 | 23.3 | 300 | 92 |  | 96.9 | 4 | Female |
| Barn owl | TA11 | - | - | - | - | - | - | - | - | 5 | - |
| Barn owl | X | 285 | 66 | 33.4 | 23.7 | 280 | - |  | 96 | 5 | Male |
| Barn owl | X | 285 | 60.7 | 29.8 | - | - | - |  | - | 3 | - |
| Barn owl | X | - | - | - | - | - | - | - | - | 3 | - |
| Barn owl | X | - | - | - | - | - | - | - | - | - | - |
| Barn owl | X | - | - | - | - | - | - | - | - | - | - |
| Little owl | AN1 | 152 | 36.5 | 19.4 | 19.6 | 130 | 52 | 22 | 56.4 | 3 | Male |
| Little owl | AN2 | 58 | 38.1 | - | - | 130 | 59 | - | - | 3 | Female |
| Little owl | AN3 | - | - | - | - | - | - | - | - | - | - |
| Little owl | AN4 | 156 | 34.5 | 19.6 | 18.2 | 130 | 53 | - | 61 | 5 | Male |
| Little owl | AN5 | 159 | 40.13 | - | - | 110 | - | - | 62.5 | - | - |
| Little owl | AN6 | 159 | 38.4 | 20.1 | 19.2 | 110 | - | 23 | 58.3 | - | - |
| Little owl | AN7 | - | - | - | - | - | - | - | - | - | - |
| Little owl | AN8 | 156 | 36.8 | 19.1 | 18.3 | 140 | 53.5 | 23 | 58.8 | 4 | - |
| Little owl | AN9 | 158 | 37.7 | 18.4 | 18.5 | 140 | 55 | 24 | 62.1 | 3 | - |
| Little owl | AN10 | 137 | 32.2 | 18.7 | - | 110 | 50.5 | - | 57.2 | 3 | Male |
| Little owl | AN11 | 157 | 38.8 | 19.2 | - | - | - | - | 62.1 | 3 | - |
| Little owl | AN12 | - | - | - | - | - | - | - | - | - | - |
| Little owl | X | - | - | - | - | - | - | - | - | - | - |
| Little owl | X | - | - | - | - | - | - | - | - | - | - |
| Little owl | X | - | - | - | - | - | - | - | - | - | - |
| Little owl | X | - | - | - | - | - | - | - | - | 3 | - |
| Little owl | X | - | - | - | - | - | - | - | - | - | - |
| Little owl | X | - | - | - | - | - | - | - | - | - | - |

**Table S2**. List of analytes and standards suppliers.

|  |  |  |
| --- | --- | --- |
| **Type** | **Compound** | **Supplier** |
| **PFAS** | Mix native PFAC-MXB | Wellington laboratories Inc. (Guelph, ON, Canada),  |
| **PAHs** | PAH solution mix (naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benz(a)anthracene, chrysen, benzo[b]fluoranthene, benzo[k]fluoranthen, benzo[a]pyrene indeno[1,2,3-cd]pyrene, dibenz[a,h]anthracene, benzo[ghi]perylene) | AccuStandard (New Haven, CT, USA) |
| **OCPs** | Hexachlorobutadiene (HCBD) | Sigma-Aldrich (Darmstadt, Germany and St. Louis, MO, USA) |
| **OCPs** | α - HCH | Dr. Ehrenstorfer (Augsburg, Germany) |
| **OCPs** | Β - HCH | Dr. Ehrenstorfer |
| **OCPs** | γ - HCH | Dr. Ehrenstorfer |
| **OCPs** | ɗ - HCH | Dr. Ehrenstorfer |
| **OCPs** | Hexachlorobenzene (HCB) | Sigma-Aldrich (Darmstadt, Germany and St. Louis, MO, USA) |
| **OCPs** | Pesticide mix 164 (2'4-DDE, 4'4-DDE, 2'4-DDD, 2'4-DDT, 4'4-DDD, 4'4-DDT) | Dr. Ehrenstorfer |
| **OCPs** | α -endosulfan | Dr. Ehrenstorfer |
| **OCPs** | β- endosulfan | Dr. Ehrenstorfer |
| **PCBs** | PCB Mix 3 (PCB 28, PCB 52, PCB 101, PCB 118, PCB 138, PCB 153, PCB 180) | Dr. Ehrenstorfer |
| **Pharmaceuticals** | Metformin | Dr. Ehrenstorfer |
| **Pharmaceuticals** | Nicotine | Sigma-Aldrich (St. Louis, USA) |
| **Pharmaceuticals** | Alopurinol | Sigma-Aldrich (St. Louis, USA) |
| **Pharmaceuticals** | Atenolol | Sigma-Aldrich (St. Louis, USA) |
| **Pharmaceuticals** | Paracetamol | European Pharmacopea Reference Standard |
| **Pharmaceuticals** | Levetiracetam | Sigma-Aldrich (St. Louis, USA) |
| **Pharmaceuticals** | Gabapentin | Sigma-Aldrich (St. Louis, USA) |
| **Pharmaceuticals** | Caffeine | Sigma-Aldrich (St. Louis, USA) |
| **Pharmaceuticals** | Pentoxifylline | Sigma-Aldrich (St. Louis, USA) |
| **Pharmaceuticals** | Tramadol | Sigma-Aldrich (St. Louis, USA) |
| **Pharmaceuticals** | Sulfamethoxazole | Sigma-Aldrich (St. Louis, USA) |
| **Pharmaceuticals** | Venlafaxine | Sigma-Aldrich (St. Louis, USA) |
| **Pharmaceuticals** | Trazodone | Sigma-Aldrich (St. Louis, USA) |
| **Pharmaceuticals** | Quetiapine | Sigma-Aldrich (St. Louis, USA) |
| **Pharmaceuticals** | Losartan | Sigma-Aldrich (St. Louis, USA) |
| **Pharmaceuticals** | Furosemide | Sigma-Aldrich (St. Louis, USA) |
| **Pharmaceuticals** | Diclofenac | Sigma-Aldrich (St. Louis, USA) |
| **Pharmaceuticals** | Atorvastatin | Sigma-Aldrich (St. Louis, USA) |
| **Pharmaceuticals** | Ibuprofen | Sigma-Aldrich (St. Louis, USA) |
| **Pharmaceuticals** | Carbamazepine | Sigma-Aldrich (St. Louis, USA) |
| **Pesticides** | Dimethoate | Sigma-Aldrich (St. Louis, USA) |
| **Pesticides** | Chlorfenvinphos | Sigma-Aldrich (St. Louis, USA) |
| **Pesticides** | Isoproturon | Sigma-Aldrich (St. Louis, USA) |
| **Pesticides** | Metalaxyl | Sigma-Aldrich (St. Louis, USA) |
| **Pesticides** | Triadimenol | Dr. Ehrenstorfer |
| **Pesticides** | Tebuconazol | Sigma-Aldrich (St. Louis, USA) |
| **Pesticides** | Kresoxim-methyl | Sigma-Aldrich (St. Louis, USA) |
| **Pesticides** | Diclofop | Sigma-Aldrich (St. Louis, USA) |
| **Pesticides** | Spinosad | Dr. Ehrenstorfer |
| **Pesticides** | Pyraclostrobin | Dr. Ehrenstorfer |
| **Pesticides** | Tebufenpyrad | Dr. Ehrenstorfer |
| **Pesticides** | Prosulfocarb | Sigma-Aldrich (St. Louis, USA) |
| **Pesticides** | Pendimethalin | Sigma-Aldrich (St. Louis, USA) |
| **Pesticides** | Chlorpyrifos | Dr. Ehrenstorfer |
| **OPEs** | TCEP | Sigma-Aldrich (St. Louis, USA) |
| **OPEs** | TBP | Sigma-Aldrich (St. Louis, USA) |
| **OPEs** | TPhP | Sigma-Aldrich (St. Louis, USA) |
| **Internal standards** | Triphenyl phosphate-d15 (TPhP-d15) | Sigma-Aldrich (St. Louis, USA) |
| Acetaminophen-methyl-d3 | Sigma-Aldrich (St. Louis, USA) |
| Carbamazepine-d2 | Sigma-Aldrich (St. Louis, USA) |
| Lidocaine-diethyl-d10 | Sigma-Aldrich (St. Louis, USA) |
| Sulfamethoxazole-d4 | Sigma-Aldrich (St. Louis, USA) |
| Isoproturon-d6 | Sigma-Aldrich (St. Louis, USA) |
| Estrone-d2 | Sigma-Aldrich (St. Louis, USA) |
| 13C-PFOA (M-PFOA) | Wellington laboratories Inc. (Guelph, ON, Canada),  |
| 13C-PFOS (M-PFOS) | Wellington laboratories Inc. (Guelph, ON, Canada),  |
| Deuterated PAH solution mix (naphthalene d-8, acenaphthene d-10, phenanthrene d-10, chrysene d-12 and perylene d-12) | Sigma-Aldrich (St. Louis, USA) |

**Table S3.** Quality parameters for Method A to determine OCPs, chlorpyrifos, PAHs, and PCBs, ordered by families and retention times (R.T., min), indicating response factor, linearity range (coefficient of determination (r2) was > 0.99 for all compounds), Instrumental Detection Limits (IDL), Method Detection Limits (MDL), percentage recovery with standard deviation (%R±SD) and recovery range, and inter-day precision (%, n=5). Ordered by retention time and chemical family.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Family** | **Compound(IUPAC name)** | **R.T.** | **Response factor** | **Linearity (ng/µL)** | **IDL (ng)** | **MDL (ng/g ww)** | **%R ± S.D.(Range)** | **Inter-day (%RSD)** |
| **OCPs** | **HCBD**(Hexachloro-1,3-butadiene) | 9.28 | 0.19 | 0.001-0.8 | 0.012 | 0.23 | 95 ± 29.8(63.7-140) | 11.4 |
| **OCPs** | **α – HCH**(1,2,3,4,5,6-hexachlorocyclohexane) | 19.3 | 0.10 | 0.001-0.2 | 0.008 | 5.52 | 100 ± 3.21(95.3-103) | 8.3 |
| **OCPs** | **HCB**(hexachlorobenzene) | 19.6 | 0.02 | 0.001-0.2 | 0.026 | 0.07 | 67 ± 2.34(64.3-68.1) | 5.77 |
| **OCPs** | **β – HCH**(1,2,3,4,5,6-Hexachlorocyclohexane) | 20.5 | 0.01 | 0.001-0.8 | 0.100 | 0.14 | 100 ± 5.93(88.1-117) | 6.31 |
| **OCPs** | **γ- HCH (Lindane)**(1,2,3,4,5,6-Hexachlorocyclohexane) | 20.5 | 0.01 | 0.001-0.2 | 0.085 | 0.09 | 105 ± 17.6(93.2-113) | 0.66 |
| **OCPs** | **ɗ - HCH**(1,2,3,4,5,6-Hexachlorocyclohexane) | 22.0 | 0.01 | 0.001-0.2 | 0.030 | 0.92 | 91 ± 17.4(82.2-113) | 12.5 |
| **OCPs** | **2,4’-DDE**(1-cloro-2-[2,2-dicloro-1-(4-clorofenil)etenil]benceno) | 31.2 | 3.23 | 0.001-0.8 | 0.015 | 0.08 | 82 ± 8.68(74-90.4) | 17.5 |
| **OCPs** | **4,4’- DDE**(1-cloro-4-[2,2-dicloro-1-(4-clorofenil)etenil]benceno) | 33.1 | 1.95 | 0.001-0.2 | 0.014 | 0.14 | 84 ± 9.15(79.1-97.5) | 14.5 |
| **OCPs** | **2,4’-DDD**(1-chloro-2-[2,2-dichloro-1-4-chlorophenyl)ethyl]benzene) | 33.6 | 3.95 | 0.001-0.2 | 0.024 | 0.09 | 83 ± 15.8(64.3-100) | 11.2 |
| **OCPs** | **2,4’- DDT**(1,1'-(2,2,2-Trichloroethane-1,1-diyl)bis(4-chlorobenzene)) | 35.6 | 8.13 | 0.001-0.2 | 0.038 | 2.77 | 86 ± 5.64(81.5-92.6) | 10.3 |
| **OCPs** | **4,4’- DDD**(1-chloro-4-[1,1-dichloro-2-(4-chlorophenyl)ethyl]benzene) | 35.7 | 5.12 | 0.001-0.2 | 0.105 | 0.18 | 91 ± 5.99(84.2-96.6) | 17.4 |
| **OCPs** | **4,4’- DDT**(1,1'-(2,2,2-Trichloroethane-1,1-diyl)bis(4-chlorobenzene)) | 37.8 | 1.91 | 0.001-0.2 | 0.058 | 0.24 | 105 ± 3.01(101-108) | 21.2 |
| **OCPs** | **α -endosulfan**(6,7,8,9,10,10-Hexachloro-1,5,5a,6,9,9a-hexahydro- 6,9-methano-2,4,3-benzodioxathiepine-3-oxide) | 31.3 | 0.18 | 0.001-0.8 | 0.029 | 0.07 | 64 ± 5.6(58.8-66) | 16.6 |
| **OCPs** | **β -endosulfan**(6,7,8,9,10,10-Hexachloro-1,5,5a,6,9,9a-hexahydro- 6,9-methano-2,4,3-benzodioxathiepine-3-oxide) | 34.7 | 0.08 | 0.001-0.2 | 0.662 | 2.11 | 56 ± 3.02(49.4-68.4) | 11.6 |
| **OPPs** | **Chlorpyrifos**(O,O-diethyl O-3,5,6-trichloropyridin-2-yl phosphorothioate) | 27.5 | 1.03 | 0.001-0.6 | 0.110 | 2.41 | 76 ± 3.26(69.3-80) | 16.9 |
| **PAHs** | **Naphthalene** | 8.51 | 0.09 | 0.001-0.2 | 0.200 | 0.63 | 50.1 ± 36(37.4-62.9) | 13.65 |
| **PAHs** | **Acenaphthylene** | 14.4 | 0.98 | 0.001-0.2 | 0.026 | 0.20 | 54 ± 1.24(48.7-56.8) | 8.43 |
| **PAHs** | **Acenaphthene** | 15.1 | 0.33 | 0.001-0.2 | 0.059 | 0.25 | 69 ± 3.55(66.9-71.6) | 4.61 |
| **PAHs** | **Fluorene** | 17.1 | 0.67 | 0.001-0.2 | 0.087 | 4.93 | 76 ± 12.6(67.2-83.4) | 7.09 |
| **PAHs** | **Phenanthrene** | 21.4 | 0.08 | 0.001-0.2 | 0.250 | 1.09 | 76 ± 16.2(59.6-88.1) | 4.86 |
| **PAHs** | **Anthracene** | 21.4 | 0.07 | 0.001-0.2 | 0.250 | 1.16 | 77 ± 16.6(59.8-88.5) | 5.69 |
| **PAHs** | **Fluoranthene** | 29.3 | 0.21 | 0.001-0.2 | 0.044 | 0.20 | 82 ± 18.3(74.3-95.4) | 13.2 |
| **PAHs** | **Pyrene** | 30.8 | 0.22 | 0.001-0.8 | 0.049 | 0.28 | 73 ± 7.32(68.7-80.2) | 15.2 |
| **PAHs** | **Benz(a)anthracene** | 40.4 | 11.15 | 0.001-0.8 | 0.208 | 0.54 | 66 ± 2.75(63.9-68.9) | 6.89 |
| **PAHs** | **Chrysene** | 40.1 | 13.69 | 0.001-0.6 | 0.379 | 5.08 | 62 ± 7.4(56.7-67.8) | 6.64 |
| **PAHs** | **Benzo[b]fluoranthene** | 47.0 | 7.03 | 0.001-0.8 | 1.115 | 7.67 | 53 ± 10.6(45.4-60.3) | 10.6 |
| **PAHs** | **Benzo[k]fluoranthene** | 47.0 | 6.58 | 0.001-0.6 | 0.211 | 0.18 | 59 ± 14.1(47.3-70.1) | 11.6 |
| **PAHs** | **Benzo[a]pyrene** | 48.1 | 4.89 | 0.001-0.2 | 0.082 | 0.52 | 65 ± 6.8(59.2-69.8) | 12.4 |
| **PAHs** | **Indeno[1,2,3-cd]pyrene** | 51.9 | 2.50 | 0.001-0.2 | 0.368 | 13.0 | 89 ± 6.6(80.5-95.0) | 13.7 |
| **PAHs** | **Dibenz[a,h]anthracene** | 52.0 | 1.45 | 0.001-0.2 | 0.182 | 0.45 | 66 ± 4.53(60.8-68.5) | 18.3 |
| **PAHs** | **Benzo[ghi]perylene** | 52.6 | 3.13 | 0.001-0.2 | 0.082 | 0.40 | 61 ± 5.19(57.6-63.9) | 13.1 |
| **PCBs** | **PCB 28**(2,4-dichloro-1-(4-chlorophenyl)benzene) | 23.9 | 0.09 | 0.001-0.2 | 0.069 | 0.18 | 83 ± 23.9(56.1-110) | 18.8 |
| **PCBs** | **PCB 52**(1,4-dichloro-2-(2,5-dichlorophenyl)benzene) | 26.0 | 2.01 | 0.001-0.8 | 0.003 | 0.11 | 62 ± 8.56(58.4-68.2) | 10.7 |
| **PCBs** | **PCB 101**(1,2,4-trichloro-5-(2,5-dichlorophenyl)benzene) | 31.3 | 2.11 | 0.001-0.8 | 0.005 | 0.10 | 60 ± 8.78(56.8-66) | 17.0 |
| **PCBs** | **PCB 118**(1,2,4-trichloro-5-(3,4-dichlorophenyl)benzene) | 35.0 | 2.31 | 0.001-0.8 | 0.079 | 0.11 | 55 ± 7.57(52-61.5) | 10.2 |
| **PCBs** | **PCB 138**(1,2,3-trichloro-4-(2,4,5-trichlorophenyl)benzene) | 38.0 | 1.90 | 0.001-0.2 | 0.058 | 0.18 | 58 ± 4.08(54.2-60.7) | 21.2 |
| **PCBs** | **PCB 153**(1,2,4-trichloro-5-(2,4,5-trichlorophenyl)benzene) | 36.4 | 1.70 | 0.001-0.6 | 0.005 | 0.17 | 63 ± 12.3(50-69.1) | 8.69 |
| **PCBs** | **PCB 180**(1,2,3,4-tetrachloro-5-(2,4,5-trichlorophenyl)benzene) | 42.0 | 0.79 | 0.001-0.8 | 0.012 | 0.33 | 62 ± 11.5(55.6-72.9) | 9.11 |

**Table S4.** Quality parameters for Method B analysing PFASs, ordered by retention time (R.T.), indicating response factor, linearity range (coefficient of determination (r2) was > 0.99 for all compounds), Instrumental Detection Limits (IDL), Method Detection Limits (MDL), percentage recovery with standard deviation (%R±SD) and inter-day precision (%, n=5).

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Family** | **Compound****(IUPAC name)** | **R.T.** | **Response factor** | **Linearity (ng/µL)** | **IDL (ng)** | **MDL (ng/g ww)** | **%R ± S.D.(Range)** | **Inter-day (%RSD)** |
| **PFASs** | **PFBA**(2,2,3,3,4,4,4-heptafluorobutanoate) | 1.71 | 7.39 | 0.001-0.3 | 0.010 | 0.24 | 112 ± 2.69(103-117) | 3.84 |
| **PFASs** | **PFPA**(2,2,3,3,3-Pentafluoropropyl acrylate) | 2.36 | 2.96 | 0.001-0.3 | 0.050 | 0.24 | 112 ± 2.69(102-117) | 5.54 |
| **PFASs** | **PFBS**(1,1,2,2,3,3,4,4,4-nonafluorobutane-1-sulfonic acid) | 2.66 | 3.84 | 0.001-0.3 | 0.040 | 0.48 | 95.5 ± 3.98(83.2-102) | 6.71 |
| **PFASs** | **PFHxA**(2,2,3,3,4,4,5,5,6,6,6-undecafluorohexanoic acid) | 3.77 | 0.28 | 0.001-0.3 | 0.050 | 0.48 | 96.3 ± 1.9(89.5-98.9) | 11.6 |
| **PFASs** | **PFHpA**(2,2,3,3,4,4,5,5,6,6,7,7,7-tridecafluoroheptanoic acid) | 6.71 | 0.27 | 0.001-0.3 | 0.050 | 0.96 | 79.8 ± 1.15(77.5-82.9) | 7.92 |
| **PFASs** | **PFHxS**(1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluorohexane-1-sulfonic acid) | 7.86 | 3.94 | 0.001-0.3 | 0.030 | 0.30 | 88.4 ± 4.8(77.5-98.5) | 8.08 |
| **PFASs** | **PFOA**(2,2,3,3,4,4,5,5,6,6,7,7,8,8,8- pentadecafluorooctanoic acid) | 9.37 | 0.35 | 0.001-0.3 | 0.020 | 0.30 | 95.9 ± 1.63(90.7-99) | 11.7 |
| **PFASs** | **PFNA**(2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,9-heptadecafluorononanoic acid) | 10.4 | 1.91 | 0.001-0.3 | 0.040 | 0.60 | 168 ± 19.1(140-180) | 9.93 |
| **PFASs** | **PFOS**(1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluorooctane-1-sulfonic acid) | 10.6 | 1.06 | 0.001-0.3 | 0.030 | 0.48 | 102 ± 3.12(97.7-108) | 2.90 |
| **PFASs** | **PFDA**(2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-nonadecafluorodecanoic acid) | 11.1 | 1.10 | 0.001-0.3 | 0.030 | 1.08 | 225 ± 8.51(209-240) | 9.35 |
| **PFASs** | **PFUnA**(2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,11-henicosafluoroundecanoic acid) | 11.6 | 1.20 | 0.001-0.3 | 0.050 | 16.86 | 138 ± 15.01(109-169) | 10.8 |
| **PFASs** | **PFDS**(1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-henicosafluorodecane-1-sulfonic acid) | 11.7 | 0.95 | 0.001-0.3 | 0.020 | 0.36 | 21.6 ± 9.68(11.4-38.7) | 3.81 |
| **PFASs** | **PFDoA**(2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-tricosafluorododecanoic acid) | 12.0 | 1.06 | 0.001-0.3 | 0.030 | 0.78 | 83.8 ± 7.87(75.6-107) | 10.2 |
| **PFASs** | **PFTrDA**(2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,13-pentacosafluorotridecanoic acid) | 12.5 | 2.35 | 0.001-0.3 | 0.110 | 1.02 | 44.4 ± 13.5(25.2-63.5) | 12.9 |

**Table S5.** Quality parameters for Method C determining pharmaceuticals, pesticides and OPEs, ordered by chemical family and retention time (R.T.), indicating response factor, linearity range (coefficient of determination (r2) was > 0.99 for all compounds), Instrumental Detection Limits (IDL), Method Detection Limits (MDL), percentage recovery with standard deviation (%R±SD) and inter-day precision (%, n=5).

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Family** | **Compound****(IUPAC name)** | **R.T.** | **Response factor** | **Linearity (ng/µL)** | **IDL (ng)** | **MDL (ng/g ww)** | **%R ± S.D.(Range)** | **Inter-day (%RSD)** |
| **Pharmaceuticals** | **Atenolol**(2-[4-[2-hydroxy-3-(propan-2-ylamino)propoxy]phenyl]acetamide) | 0.99 | 0.04 | 0.015-0.2 | 0.540 | 1.5 | 43 ± 21.2(35.8-46.4) | 55.3 |
| **Pharmaceuticals** | **Paracetamol**(N-(4-hydroxyphenyl)acetamide) | 2.85 | 0.26 | 0.001-0.3 | 0.257 | 1.44 | 142 ± 13.9(94-165) | 47.7 |
| **Pharmaceuticals** | **Caffeine**(1,3,7-trimethylpurine-2,6-dione) | 5.81 | 0.43 | 0.005-0.2 | 0.342 | 2.52 | 150 ± 18.3(87.6-178) | 18.2 |
| **Pharmaceuticals** | **Pentoxifylline**(3,7-dimethyl-1-(5-oxohexyl)purine-2,6-dione) | 8.31 | 1.85 | 0.001-0.3 | 0.012 | 0.24 | 141 ± 9.8(108-159) | 6.9 |
| **Pharmaceuticals** | **Tramadol**((1R,2R)-2-[(dimethylamino)methyl]-1-(3-methoxyphenyl)cyclohexan-1-ol) | 8.53 | 0.72 | 0.005-0.3 | 0.520 | 0.84 | 149 ± 9.3(117-164) | 16.7 |
| **Pharmaceuticals** | **Sulfamethoxazole**(4-amino-N-(5-methyl-1,2-oxazol-3-yl)benzenesulfonamide) | 8.64 | 0.46 | 0.001-0.3 | 0.318 | 0.78 | 123 ± 11.6(121-155) | 27.3 |
| **Pharmaceuticals** | **Venlafaxine**(1-[2-(dimethylamino)-1-(4-methoxyphenyl)ethyl]cyclohexan-1-ol) | 10.1 | 2.56 | 0.005-0.3 | 0.079 | 0.54 | 261 ± 19.5(233-270) | 32.6 |
| **Pharmaceuticals** | **Trazodone**(2-[3-[4-(3-chlorophenyl)piperazin-1-yl]propyl]-[1,2,4]triazolo[4,3-a]pyridin-3-one) | 10.4 | 2.80 | 0.001-0.3 | 0.067 | 0.12 | 111 ± 8.27(88.8-134) | 17.8 |
| **Pharmaceuticals** | **Quetiapine**(2-[2-(4-benzo[b][1,4]benzothiazepin-6-ylpiperazin-1-yl)ethoxy]ethanol) | 10.6 | 1.28 | 0.001-0.3 | 0.121 | 0.18 | 124 ± 13.5(94.6.140) | 10.6 |
| **Pharmaceuticals** | **Furosemide**(4-chloro-2-(furan-2-ylmethylamino)-5-sulfamoylbenzoic acid) | 11.5 | 0.09 | 0.01-0.2 | 1.367 | 1.14 | 34 ± 3.66(26-6-41.8) | 14.1 |
| **Pharmaceuticals** | **Carbamazepine**(benzo[b][1]benzazepine-11-carboxamide) | 11.6 | 8.30 | 0.001-0.2 | 0.416 | 0.06 | 178 ± 15.9(138-218) | 14.1 |
| **Pharmaceuticals** | **Losartan**([2-butyl-5-chloro-3-[[4-[2-(2H-tetrazol-5-yl)phenyl]phenyl]methyl]imidazol-4-yl]methanol) | 12.6 | 3.63 | 0.001-0.2 | 0.061 | 0.3 | 83 ± 8.81(55.4-103) | 22.4 |
| **Pharmaceuticals** | **Diclofenac**(2-[2-(2,6-dichloroanilino)phenyl]acetic acid) | 16.8 | 0.04 | 0.001-0.2 | 0.524 | 0.24 | 40 ± 6.36(26-54.6) | 15.1 |
| **Pharmaceuticals** | **Atorvastatin**((3R,5R)-7-[2-(4-fluorophenyl)-3-phenyl-4-(phenylcarbamoyl)-5-propan-2-ylpyrrol-1-yl]-3,5-dihydroxyheptanoic acid) | 16.8 | 1.32 | 0.005-0.3 | 0.483 | 0.42 | 77 ± 8.61(50.8-94.4) | 33.5 |
| **Pharmaceuticals** | **Ibuprofen**(2-[4-(2-methylpropyl)phenyl]propanoic acid) | 17.2 | 0.06 | 0.025-0.3 | 4.211 | 1.44 | 142 ± 13.9(94-160) | 16.1 |
| **Pesticides** | **Dimethoate**(2-dimethoxyphosphinothioylsulfanyl-N-methylacetamide) | 8.49 | 0.06 | 0.005-0.3 | 0.060 | 0.6 | 82 ± 2.3(78.2-88.9) | 15.9 |
| **Pesticides** | **Chlorfenvinphos**([(E)-2-chloro-1-(2,4-dichlorophenyl)ethenyl] diethyl phosphate) | 12.4 | 0.23 | 0.001-0.3 | 0.134 | 0.72 | 20 ± 1.73(16.4-26) | 29.4 |
| **Pesticides** | **Isoproturon**(1,1-dimethyl-3-(4-propan-2-ylphenyl)urea) | 13.1 | 0.44 | 0.001-0.2 | 0.104 | 0.42 | 109 ± 1.13(105-111) | 33.3 |
| **Pesticides** | **Metalaxyl**(methyl 2-(N-(2-methoxyacetyl)-2,6-dimethylanilino)propanoate) | 13.2 | 0.05 | 0.001-0.3 | 0.199 | 0.84 | 132 ± 2.97(126-138) | 12.1 |
| **Pesticides** | **Triadimenol**(1-(4-chlorophenoxy)-3,3-dimethyl-1-(1,2,4-triazol-1-yl)butan-2-ol) | 15.1 | 0.01 | 0.005-0.2 | 3.376 | 4.62 | 131 ± 1.98(126-137) | 17.7 |
| **Pesticides** | **Tebuconazol**(1-(4-chlorophenyl)-4,4-dimethyl-3-(1,2,4-triazol-1-ylmethyl)pentan-3-ol) | 16.8 | 0.30 | 0.01-0.2 | 0.126 | 0.3 | 58 ± 3.12(50.8-65.4) | 9.2 |
| **Pesticides** | **Kresoxim-methyl**(methyl (2E)-2-methoxyimino-2-[2-[(2-methylphenoxy)methyl]phenyl]acetate) | 18.2 | 0.03 | 0.015-0.3 | 0.874 | 0.78 | 51 ± 2.64(42.6-56.2) | 15.2 |
| **Pesticides** | **Spinosad**(15-[5-(dimethylamino)-6-methyloxan-2-yl]oxy-19-ethyl-14-methyl-7-(2,3,4-trimethoxy-5-methylcyclohexyl)oxy-20-oxatetracyclo[10.10.0.02,10.05,9]docosane-13,21-dione) | 18.7 | 0.07 | 0.001-0.3 | 0.227 | 0.78 | 71 ± 1.51(66.2-73.8) | 11.6 |
| **Pesticides** | **Pyraclostrobin**(methyl N-[2-[[1-(4-chlorophenyl)pyrazol-3-yl]oxymethyl]phenyl]-N-methoxycarbamate) | 19.0 | 0.04 | 0.001-0.3 | 1.761 | 0.36 | 15 ± 2.63(10-21.8) | 8.2 |
| **Pesticides** | **Tebufenpyrad**(N-[(4-tert-butylphenyl)methyl]-4-chloro-5-ethyl-2-methylpyrazole-3-carboxamide) | 20.4 | 0.03 | 0.001-0.3 | 4.649 | 0.6 | 82 ± 2.3(78.2-88.9) | 12.7 |
| **Pesticides** | **Prosulfocarb**(S-benzyl N,N-dipropylcarbamothioate) | 20.5 | 0.03 | 0.001-0.3 | 2.725 | 0.9 | 27 ± 1.66(22.2-30.8) | 11.6 |
| **OPEs** | **TCEP**(3-[bis(2-carboxyethyl)phosphanyl]propanoic acid) | 12.3 | 0.01 | 0.005-0.2 | 1.832 | 1.02 | 102 ± 2.38(95.2-107) | 10.5 |
| **OPEs** | **TBP**(tributyl phosphate) | 18.7 | 0.23 | 0.001-0.3 | 0.593 | 1.14 | 55 ± 1.78(52-59.4) | 6.5 |
| **OPEs** | **TPhP**(triphenyl phosphate) | 18.7 | 0.10 | 0.001-0.3 | 2.350 | 1.14 | 54 ± 1.68(52-59.4) | 9.2 |

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**Figure S1.** Normality plots for the sum of the log x+1 concentrations of the chemical families.

**Table S6.** Kruskall-wallis and Dunn test pairwise comparisons among species for ∑OCPs, ∑PCBs, PFOS and ∑PAHs.





**Figure S2**. Frequency of detection (%) of the 21 compounds out of 81 target compounds detected above the MDL in the 47 analysed owl livers.

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**Figure S3. ∑**PAHs concentrations in analysed road-killed owl species. Different letters indicate statistically significant differences (p≤0.05)