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| **Authors (publication date)** | **Groups** | **Smoking status** | **GCF sampling** | **Biological parameter** | **Determination of the biological parameter** | **Results** |
| Boström et al. 2000 | 40 subjects* 22 smokers
* 18 non smokers
 | Smokers: 20 cigaretes/day>31yearsNon smokers: never smoked | Aspiration method | IL-1b, IL-1ra | ELISA | No significant differences either in IL-1b or IL-1ra between smokers and non smokers(p>0,05) |
| Fraser et al. 2001 | 28 subjects* 14 smokers
* 14 non smokers
 | Smokers :≥10 cigarettes/day≥3 yearsNon smokers: no cigarettes in the previous 10 years | Periopaper strip into the gingival crevice for 30 sec | s- ICAM1 | ELISA | s-ICAM1:significantly lower in smokers compared with non smokers(p<0,05) |
| Rawlinson et al. 2003 | 23 subjects* 13 smokers
* 10 non smokers
 | Smokers :15-79 pack years(mean 32,5±17.75 | Periopaper strip 1mm into the gingival crevice or pocket entrance for 3 min | IL-1b, IL- 1ra | ELISA | IL-1b: significantly lower concentration in smokers for deep bleeding sites(p<0.05)IL-1ra: significantly lower concentration in smokers for healthy, deep non-bleeding and deep bleeding sites |
| Erdemir et al. 2004 | 41 subjects* 22 smokers
* 19 non smokers
 | Smokers : 20 cigarettes/dayNon smokers: never smoked | Periopaper strip into the gingival crevice for 30 sec | IL- 6, TNF- α | ELISA | No significant differences between smokers and non smokers in the concentration and total amounts of IL-6 and TNF-a both in the 3rd and 6th month after non-surgical periodontal therapy(p>0,05) |
| Petropoulos et al. 2004 | 33 subjects* 14 smokers
* 19 non smokers
 | Smokers :not definedNon smokers: never smoked or ex-smokers having stopped at least 2years before | Durapore strip in the pocket for 10 sec | IL- 1α | ELISA | IL-1a: significantly reduced in smokers(p<0,05) |
| Buduneli et al. 2005 | 60 subjects* 20 patients with chronic gingivitis( 10 smokers,10 non smokers)
* 20 patients with chronic periodontitis(10 smokers, 10 non smokers)
* 20 periodontally healthy adults(10 smokers, 10 non smokers)
 | Smokers : ≥10 cigarettes/day>5yearsNon smokers: never smoked | Periopaper strip in the orifices of gingival sulcus/pocket for 30 sec | Plasminogen activator system proteins( PA) | ELISA | * No significant differences in t-PA and PAI-1 level and the ratios of PAs to PAIs between smokers and non smokers (p>0,05)
* u-PA level: significantly lower in smokers (p<0,05)
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| Kurtis et al. 2007a | 42 subjects* 21 smokers with chronic periodontitis
* 21 non smokers with chronic periodontitis
 | Smokers :≥10 cigarettes/day>5yarsNon smokers: never smoked | Periopapaer strip into the gingival crevice ≤1mm for 30 sec | PGE2- TBARS | ELISA | * No significant differences in PGE2, TBARS levels between smokers and non smokers at baseline(p>0,05)
* No significant differences in PGE2 levels between smokers and non smokers after therapy(p>0,05)
* No significant differences in TBARS levels between groups 2 and 4(p>0,05) after therapy
* Significantly lower TBARS levels in group 3(smokers) compared with group 1 (non smokers) after therapy(p<0,05)
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| Kurtis et al. 2007b | 58 subjects* 29 smokers with chronic periodontitis
* 29 non smokers with chronic periodontitis
 | Smokers :≥10 cigarettes/day>5yarsNon smokers: never smoked | Periopaper strip into the gingival crevice ≤1mm for 30 sec | MMP- 8 | ELISA | No significant differences in MMP-8 levels between smokers and non smokers at baseline anafter therapy(p>0,05) |
| Buduneli et al. 2009 | 20 subjects* 10 smokers with chronic periodontitis
* 10 non smokers with chronic periodontitis
 | Smokers : ≥10 cigarettes/day>yearsNon smokers: never smoked | Periopapaer strip in the gingical sulcus/pocket for 30 sec | IL- 17, sRANKL , OPG | ELISA | No significant differences in the levels of IL-17, s RANKL, OPG between smokers and non smokers at baseline and 4 weeks after treatment(p>0,05) |
| Rai et al. 2010 | 45 subjects* 12 smokers with chronic periodontitis
* 10 non smokers with chronic periodontitis
* 11 smokers with healthy periodontium
* 12 non smokers with healthy periodontium
 | Smokers :>18-20 cigarettes/dayNon smokers:never smoked | Periopaper strip in gingival pocket for 45 sec | GM( GCF myeloperoxidase) | Not reported | GM: significantly increased in smokers(p<0,05) |
| Tymkiw et al. 2011 | 52 subjects* 20 smokers with chronic periodontitis
* 20 non smokers with chronic periodontitis

 * 12 periodontally healthy controls
 | Smokers : ≥20 cigarettes/dayNon smokers: not having smoked 100 or more cigarettes in their lifetime | Periopaper strip into the crevice 1-2 mm for 30 sec | IL-2, IL-12(p70),IFN-γ, IL-3, IL-4,IL-5,IL-10,IL-1b, IL-6,GM-CSF, TNF-a-IL-12, IL-8, IP-10, MCP-1, MIP-1a, RANTES, Eotaxin, IL-7, IL-15  | Millipore in the Luminex100 IS Instrunment | * Healthy sites in smokers(SH):significantly less IL-6, IL-12(p40) compared with healthy sites in non smokers(NH)
* Diseased sites in smokers(SD): significantly less IL-1a, IL-6, IL-12 compared with diseased sites in non smokers(ND)
* Healthy and diseased sites in smokers(SH+SD): significantly less IL-8,IP-10, MCP-1, MIP-1a, RANTES compared with healthy and diseased sites in non smokers(NH+ND)
* No significant differences either in healthy or in diseased sites between smokers and non smokers concerning IL-2, IFN-γ, IL-3, IL-4
* Diseased sites in smokers(SD): significantly less IL-7, IL-15 compared with diseased sites in non smokers (ND)
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| Anil et al. 2013 | 90 subjects* 30 periodontally healthy controls
* 30 smokers with periodontitis
* 30 non smokers with periodontitis
 | Smokers:≥20 cigarettes/day≥2 yearsNon smokers:never smoked | Microcapillary pipette at the entrance of the gingival sulcus | MCP-1 |  | MCP-1: significantly higher in smokers |