| **Supplementary Table 1. Characteristics of included studies.** | | | | |
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| Study ID  Study design | Population  Age  Gender (M/F) | Inclusion criteria  Exclusion criteria | Treatment  Outcomes indictors  Follow-up (week or month) | ICG concentration  ICG activation  Laser parameters |
| Abbas Monzavi, et al. 2016 [35]  Full-mouth design | N = 50  Age (49.6 ± 8.5)  M/F (25/25) | IC: chronic periodontitis;  PPD ≥ 5 mm at least 3 teeth;  Age ≥ 35;  FMPS < 20% after SRP;  Healthy subjects.  EC：periodontal therapy or antibiotics for the past 6 months; smoker; gravida; systemic disease. | Test: aPDT+ SRP  Control: SRP  BOP, PPD, CAL,  PI (heterogeneity), FMPS, FMBS  Baseline, 1 month, 3 month | ICG: 1 mg/ml  Activation time: not mentioned  Wavelength: 810 nm  Output Power: 200 mW  Application time: 40 s  Total energy: 10 J |
| Chetan Purushottam Raut, et al. 2018 [31]  Full-mouth design | N = 50  Age (49.8 ± 5.1)  M/F (28/22) | IC: chronic periodontitis  PPD > 5 mm and CAL > 4 mm  Healthy subjects  EC: periodontal therapy or antibiotics for the past 12 months; smoker; gravida; systemic disease; allergic reaction to ICG. | Test: aPDT+ SRP  Control: SRP  PPD, PI, CAL, BOP  Baseline, 6 month | ICG: 5mg/ml  Activation time: 60s  Wavelength: 810 nm  Output Power: 800 mv  Application time: 60s  Energy density: 5.4 J/cm2 |
| Greta Hill, et al. 2019 [33]  Split-mouth design | N = 20  Age 61.1  M/F (3/17) | IC: chronic periodontitis  PSI ≥ 3  PPD ≥ 4mm at least one single and multi-rooted tooth in each quadrant.  PI < 30%  EC: periodontal therapy or antibiotics for the past 6 months; smoker; gravida; systemic disease; allergic reaction to ICG. | Test: aPDT+ SRP  Control: SRP  BOP, SFFR, PPD, GR  Baseline, 2 weeks, 3 month,  6 month | ICG: 0.1 mg/ml  Activation time: 60 s  Wavelength: 808 nm  Output Power: 100 mw  Application time: 20 s  Energy density: 2829 J/cm2 |
| Kanchana Sukumar, et al. 2020 [32]  Split-mouth design | N = 30  Age (38.60 ± 6.75)  M/F (22 /8) | IC: moderate chronic periodontitis(Stage Ⅱ Grade A).  The periodontal destruction at least 3 teeth in each segment.  4 mm - 6 mm of PPD with attachment loss.  EC: periodontal therapy or antibiotics for the past 3 months; Smoker; gravida; systemic disease; allergic reaction to ICG. | Test: aPDT+ SRP  Control: SRP  PI, GI, PPD, GBI, CAL  Baseline/1month, 3 month,  6 month | ICG: 1 mg/ml  Activation time: not mentioned  Wavelength: 810 nm  Output Power: 800 mW  Application time: 30 s |
| Karuna Joshi, et al. 2019 [36]  Split-mouth design | N = 29  Age 30-60  M/F (14/15) | IC: moderate to serve chronic Periodontitis  5 mm - 7 mm of PPD at least 2 single-root teeth  CAL ≥ 3 mm  BOP at least 1 site  EC: periodontal therapy or antibiotics for the past 6 months; smoker; gravida; systemic disease; allergic reaction to ICG. | Test: aPDT+ SRP  Control: SRP  PI, sMBI, PPD, CAL  Baseline, 3 month | ICG: 1mg/ml  Activation time: 60 s  Wavelength: 810 nm  Output Power: 200 mW  Application time: 30 s |
| Kaveri Kranti Gandhi, et al. 2018 [37]  Split-mouth design | N = 30  Age 30-60  Gender was not described | IC: moderate to serve chronic periodontal  PPD ≥ 5 mm at least one pocket in each quarter.  EC: periodontal therapy or antibiotics for the past 6 months; smoker; gravida; systemic disease; allergic reaction to ICG | Test 1: aPDT+ SRP  Test 2: LLLT+SRP  Control: SRP  PI, GI, PPD, CAL  Baseline, 1 month, 3 month,  6 month, 9 month | ICG: no concentration  Activation time: 120 s  Wavelength: 810 nm  Output power: 100 mW  Application time: 120 s |
| Reza Birang, et al. 2015 [38]  Split-mouth design | N = 20  Age (37.2 ± 8.6)  M/F (7/13) | IC: Age ≥ 18  Healthy subjects  Remaining tooth ≥ 20  4mm-7mm of PPD and CAL ≥ 2mm  At least 3 sites each quarter  EC：periodontal surgery for 1 years and antibiotics for the past 6 months; smoker; gravida; | Test 1: aPDT+SRP  Test 2: LLLT+SRP  Control: SRP  PPD, CAL, PI, PBI  Baseline, 6 week, 3 month | ICG: no concertation  Wavelength: 810 nm  Output power: 500 mW  Application times: 50 s  Activation time: not mentioned |
| Saurabh H Shingnapurkar, et al. 2017 [34]  Split-mouth design | N = 30  Age 25-55 | IC：minimum 20 tooth  Chronic periodontitis  At least 4 teeth with probing depth ≥5 mm (two tooth in contralateral quadrant)  EC: periodontal therapy for the past 3 months and antibiotics for the past 6 months smoker; gravida; | Text: aPDT+SRP  Control: SRP  PI, GI, PPD, RAL(CAL)  Baseline, 1 month,  3 month | ICG: 1 mg/ml  Wavelength: 810 nm  Output power: 200 mW  Application times: 30 s  Energy density: 0.0125 J/cm2  Total energy: 3 J |
| IC: Inclusion criteria; PSI: Periodontal Screening Index in Germany; EC: Exclusion criteria; SRP: scaling and root planning; aPDT: antimicrobial photodynamic therapy; LLLT: low level laser therapy; PPD: probing pocket depth; CAL: Clinical Attachment Loss; PI: plaque index; GI: gingival Index; GBI: gingival bleeding index; FMPS: full mouth plaque score; FMBS: full mouth bleeding score; SFFR: sulcus fluid flow rate; GR: gingival recession; sMBI: modified sulcular bleeding index; PBI: papilla bleeding index; RAL: relative attachment level. | | | | |